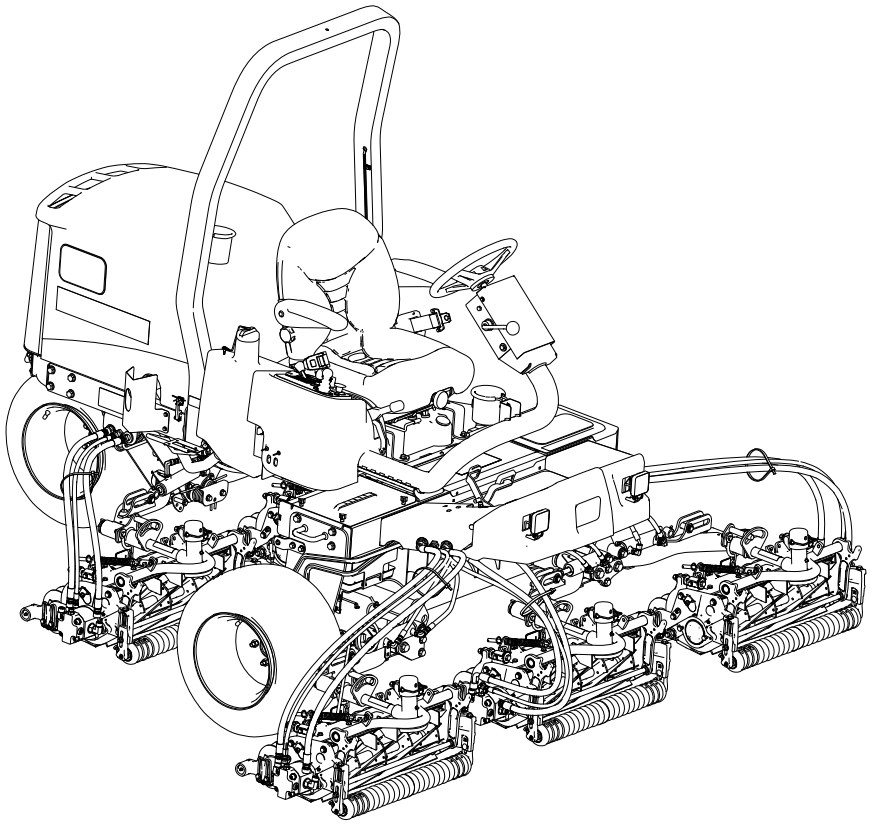
Operator's Manual

Reelmaster® 3555, 3575, and 3550 Traction Units



Model—Serial Range

03820—418400000 and Up
03821—418254731 and Up
03910—418200000 and Up

3471-203A

Original Instructions (EN)

3471-203 A

Disclaimers and Regulatory Information

This product complies with all relevant European directives; for details, please see the separate product specific Declaration of Conformity (DOC) sheet.

It is a violation of California Public Resource Code 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 arrester, as defined in Section 4442, maintained in effective working order, or the engine is constructed, equipped, and maintained for the prevention of fire.

The enclosed engine owner's manual is supplied for information regarding the US Environmental Protection Agency (EPA) and the California Emission Control Regulation of emission systems, maintenance, and warranty. Replacements may be ordered through the engine manufacturer.

⚠ WARNING

CALIFORNIA
Proposition 65

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

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

Use of this product may cause exposure to chemicals known to the State of California to cause cancer, birth defects, or other reproductive harm.

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Bloomington, MN 55044

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Electromagnetic Compatibility Certification

If this machine is equipped with a telematics device, refer to your authorized Toro distributor for instructions to activate the device.

Domestic: This device complies with FCC Rules Part 15. Operation is subject to the following two conditions: (1) This device may not cause harmful interference and (2) this device must accept any interference that may be received, including interference that may cause undesirable operation.

FCC ID: APV-3640LB

IC: 5843C-3640LB

This equipment has been tested and found to comply within the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to connect the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Argentina

New Zealand

R-NZ

Australia

South Korea

Morocco

AGREE PAR L’ANRT MAROC

Numéro d’agrément: MR00004789ANRT20024

Date d’agrément: 11/4/2024

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California Proposition 65 Warning Information

Intended Use

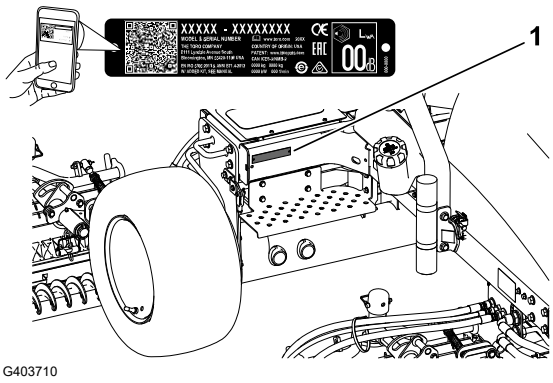
This machine is a ride-on, reel-blade lawn mower intended to be used by professional, hired operators in commercial applications. It is primarily designed for cutting grass on well-maintained turf. Using this product for purposes other than its intended use could prove dangerous to you and bystanders.

Read this information carefully to learn how to operate and maintain your product properly and to avoid injury and product damage. You are responsible for operating the product properly and safely.

Getting Help

Visit www.Toro.com for product safety and operation training materials, accessory information, help finding a dealer, or to register your product.

Whenever you need service, genuine Toro parts, or additional information, contact an Authorized Service Dealer or Toro Customer Service and have the model and serial numbers of your product ready. These numbers are located on the serial plate on your product (1). Write the numbers in the space provided.



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IMPORTANT

With your mobile device, you can scan the QR code on the serial number decal (if equipped) to access warranty, parts, and other product information.

Model Number:		**Serial Number:**	

Manual Conventions

This manual identifies potential hazards and has safety messages identified by the safety-alert symbol, which signals a hazard that may cause serious injury or death if you do not follow the recommended precautions.

G405934

This manual uses 2 words to highlight information. **Important** calls attention to special mechanical information and **Note** emphasizes general information worthy of special attention.

Safety Alert Classifications

The safety-alert symbol shown in this manual and on the machine identifies important safety messages that you must follow to prevent accidents.

Safety-alert symbol appears above information that alerts you to unsafe actions or situations and is followed by the word **DANGER**, **WARNING**, or **CAUTION**.

DANGER

Danger indicates an imminently hazardous situation which, if not avoided, *will* result in death or serious injury.

WARNING

Warning indicates a potentially hazardous situation which, if not avoided, *could* result in death or serious injury.

CAUTION

Caution indicates a potentially hazardous situation which, if not avoided, *may* result in minor or moderate injury.

General Safety

- This product is capable of amputating hands and feet and of throwing objects.
- Read and understand the contents of this *Operator's Manual* before starting the engine.
- Use your full attention while operating the machine. Do not engage in any activity that causes distractions; otherwise, injury or property damage may occur.
- Do not put your hands or feet near moving components of the machine.
- Do not operate the machine without all guards and other safety protective devices in place and functioning properly on the machine.
- Keep bystanders and children out of the operating area. Never allow children to operate the machine.
- Shut off the engine, remove the key, and wait for all movement to stop before you leave the operator's position. Allow the machine to cool before adjusting, servicing, cleaning, or storing it.

Improperly using or maintaining this machine can result in injury. To reduce the potential for injury, comply with these safety instructions and always pay attention to the safety-alert symbol ⚠, which means **Caution**, **Warning**, or **Danger**—personal safety instruction. Failure to comply with these instructions may result in personal injury or death.

Before Operation Safety

- Never allow children or untrained people to operate or service the machine. Local regulations may restrict the age of the operator. The owner is responsible for training all operators and mechanics.
- Become familiar with the safe operation of the machine, operator controls, and safety signs.
- Before you leave the operator's position, do the following:.
  - Park the machine on a level surface
  - Disengage and lower the cutting units.
  - Engage the parking brake.
  - Shut off the engine and remove the key.
  - Wait for all movement to stop.
  - Allow the machine to cool before adjusting, servicing, cleaning, or storing it.
- Know how to stop the machine and shut off the engine quickly.
- Do not operate the machine without all guards and other safety protective devices in place and functioning properly on the machine.

- Before mowing, always inspect the machine to ensure that the cutting units are in good working condition.
- Inspect the area where you will use the machine and remove all objects that the machine could throw.
- This product generates an electromagnetic field. If you wear an implantable electronic medical device, consult your health care professional before using this product.

Fuel Safety

- Use extreme care in handling fuel. It is flammable and its vapors are explosive.
- Extinguish all cigarettes, cigars, pipes, and other sources of ignition.
- Use only an approved fuel container.
- Do not remove the fuel cap or fill the fuel tank while the engine is running or hot.
- Do not add or drain fuel in an enclosed space.
- Do not 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.
- If you spill fuel, do not attempt to start the engine; avoid creating any source of ignition until the fuel vapors have dissipated.

During Operation Safety

- The owner/operator can prevent and is responsible for accidents that may cause personal injury or property damage.
- Wear appropriate clothing, including eye protection; long pants; substantial, slip-resistant footwear; and hearing protection. Tie back long hair and do not wear loose clothing or loose jewelry. Wear a dust mask in dusty operating conditions.
- Do not operate the machine while ill, tired, or under the influence of alcohol or drugs.
- Use your full attention while operating the machine. Do not engage in any activity that causes distractions; otherwise, injury or property damage may occur.
- Before you start the engine, ensure that all drives are in neutral, the parking brake is engaged, and you are in the operating position.
- Do not carry passengers on the machine and keep bystanders and children out of the operating area.
- Operate the machine only in good visibility to avoid holes or hidden hazards.
- Avoid mowing on wet grass. Reduced traction could cause the machine to slide.
- Keep your hands and feet away from the cutting units.
- Look behind and down before backing up to be sure of a clear path.
- Use care when approaching blind corners, shrubs, trees, or other objects that may obscure your vision.
- Stop the cutting units whenever you are not mowing.
- Slow down and use caution when making turns and crossing roads and sidewalks with the machine. Always yield the right-of-way.

- Operate the engine only in well-ventilated areas. Exhaust gasses contain carbon monoxide, which is lethal if inhaled.
- Do not leave a running machine unattended.
- Before you leave the operator's position, do the following:
  - Park the machine on a level surface.
  - Disengage and lower the cutting units.
  - Engage the parking brake.
  - Shut off the engine and remove the key.
  - Wait for all movement to stop.
  - Allow the machine to cool before adjusting, servicing, cleaning, or storing it.
- Operate the machine only in good visibility and appropriate weather conditions. Do not operate the machine when there is the risk of lightning.
- Use the cruise control (if equipped) only when you can operate the machine in an open, flat area that is free from obstacles and where the machine can move at a constant speed without interruption.

Rollover Protection System (ROPS) Safety

- Do not remove any of the ROPS components from the machine.
- Ensure that the seat belt is attached and that you can release it quickly in an emergency.
- Always wear your seat belt.
- Check carefully for overhead obstructions and do not contact them.
- Keep the ROPS in safe operating condition by thoroughly inspecting it periodically for damage and keeping all the mounting fasteners tight.
- Replace all damaged ROPS components. Do not repair or alter them.

Slope Safety

- Slopes are a major factor related to loss of control and rollover accidents, which can result in severe injury or death. You are responsible for safe slope operation. Operating the machine on any slope requires extra caution.
- Evaluate the site conditions to determine if the slope is safe for machine operation, including surveying the site. Always use common sense and good judgment when performing this survey.
- Review the slope instructions, listed below, for operating the machine on slopes. Before you operate the machine, review the site conditions to determine whether you can operate the machine in the conditions on that day and at that site. Changes in the terrain can result in a change in slope operation for the machine.
  - Avoid starting, stopping, or turning the machine on slopes. Avoid making sudden changes in speed or direction. Make turns slowly and gradually.
  - Do not operate a machine under any conditions where traction, steering, or stability is in question.

Slope Safety (continued)

- Remove or mark obstructions such as ditches, holes, ruts, bumps, rocks, or other hidden hazards. Tall grass can hide obstructions. Uneven terrain could overturn the machine.
- Be aware that operating the machine on wet grass, across slopes, or downhill may cause the machine to lose traction.
- Use extreme caution when operating the machine near drop-offs, ditches, embankments, water hazards, or other hazards. The machine could suddenly roll over if a wheel goes over the edge or the edge caves in. Establish a safety area between the machine and any hazard.
- Identify hazards at the base of the slope. If there are hazards, mow the slope with a pedestrian-controlled machine.
- If possible, keep the cutting units lowered to the ground while operating on slopes. Raising the cutting units while operating on slopes can cause the machine to become unstable.

After Operation Safety

- Park the machine on a level surface.
- Disengage and lower the cutting units
- Engage the parking brake.
- Shut off the engine and remove the key.
- Wait for all movement to stop.
- Allow the machine to cool before adjusting, servicing, cleaning, or storing it.
- To help prevent fires, ensure that the cutting units, drives, mufflers, cooling screens, and engine compartment are free from grass and debris buildup. Clean up oil or fuel spills.
- Disengage the drive to the attachment whenever you are hauling or not using the machine.
- Maintain and clean the seat belt(s) as necessary.
- Do not store the machine or fuel container where there is an open flame, spark, or pilot light, such as on a water heater or on other appliances.

Maintenance Safety

- Before you leave the operator’s position, do the following:
  - Park the machine on a level surface.
  - Disengage and lower the cutting units.
  - Engage the parking brake.
  - Shut off the engine and remove the key.
  - Wait for all movement to stop.
  - Allow the machine to cool before adjusting, servicing, cleaning, or storing it.

- Wear appropriate clothing, including eye-protection; long pants and substantial, slip-resistant footwear. Keep hands, feet, clothing, jewelry, and long hair away from moving parts.
- Allow machine components to cool before performing maintenance.
- If possible, do not perform maintenance while the engine is running. Keep away from moving parts.
- Operate the engine only in well-ventilated areas. Exhaust gases contain carbon monoxide, which is lethal if inhaled.
- Support the machine with jack stands whenever you work under the machine.
- Carefully release pressure from components with stored energy.
- Keep all parts of the machine in good working condition and all hardware tightened.
- Replace all worn or damaged decals.
- To ensure safe, optimal performance of the machine, use only genuine Toro replacement parts. Replacement parts made by other manufacturers could be dangerous, and such use could void the product warranty.

Engine Safety

- Shut off the engine before checking the oil or adding oil to the crankcase.
- Do not change the governor speed or overspeed the engine.

Electrical System Safety

- Disconnect the battery before repairing the machine. Disconnect the negative terminal first and the positive last. Connect the positive terminal first and the negative last.
- Charge the battery in an open, well-ventilated area, away from sparks and flames. Unplug the charger before connecting or disconnecting the battery. Wear protective clothing and use insulated tools.

Cooling System Safety

- Swallowing engine coolant can cause poisoning; keep out of reach from children and pets.
- Discharge of hot, pressurized coolant or touching a hot radiator and surrounding parts can cause severe burns.
  - Always allow the engine to cool at least 15 minutes before removing the radiator cap.
  - Use a rag when opening the radiator cap, and open the cap slowly to allow steam to escape.

Hydraulic System Safety

- Seek immediate medical attention if fluid is injected into skin. Injected fluid must be surgically removed within a few hours by a doctor.
- Ensure that all hydraulic-fluid hoses and lines are in good condition and all hydraulic connections and fittings are tight before applying pressure to the hydraulic system.

Hydraulic System Safety (continued)

- Keep your body and hands away from pinhole leaks or nozzles that eject high-pressure hydraulic fluid.
- Use cardboard or paper to find hydraulic leaks.
- Safely relieve all pressure in the hydraulic system before performing any work on the hydraulic system.

Blade Safety

- A worn or damaged blade or bedknife can break, and a piece could be thrown toward you or bystanders, resulting in serious personal injury or death.
- Inspect the blades and bedknives periodically for excessive wear or damage.
- Use care when checking the blades. Wear gloves and use caution when servicing them. Only replace or backlap the blades and bedknives; never straighten or weld them.
- On machines with multiple cutting units, take care when rotating a cutting unit; it can cause the reels in the other cutting units to rotate.

Storage Safety

- Before you leave the operator’s position, do the following:
  - Park the machine on a level surface.
  - Disengage and lower the cutting units.
  - Engage the parking brake.
  - Shut off the engine and remove the key.
  - Wait for all movement to stop.
  - Allow the machine to cool before adjusting, servicing, cleaning, or storing it.
- Do not 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.

Safety and Instructional Decals

Safety decals and instructions are easily visible to the operator and are located near any area of potential danger. Replace any decal that is damaged or missing.

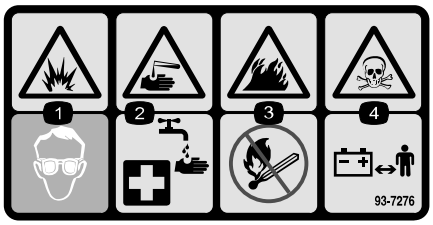
Battery Symbols

Some or all of these symbols are on your battery.

s_batterysymbols2

1. Explosion hazard
2. No fire, open flame, or smoking
3. Caustic liquid/chemical burn hazard
4. Wear eye protection.
5. Read the *Operator's Manual*.
6. Keep bystanders away from the battery.
7. Wear eye protection; explosive gases can cause blindness and other injuries.
8. Battery acid can cause blindness or severe burns.
9. Flush eyes immediately with water and get medical help fast.
10. Contains lead; do not discard

Decal Part: 93-7276



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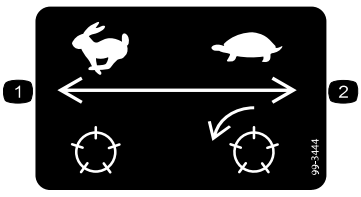
1. Explosion hazard—wear eye protection.
2. Caustic liquid/chemical burn hazard—to perform first aid, flush with water.
3. Fire hazard—no fire, open flames, or smoking.
4. Poison hazard—keep children away from the battery.

Decal Part: 99-3444



s_decal99-3444

1. Transport speed—fast
2. Mowing speed—slow

Decal Part: 106-6755

Models 03821 and 03910

s_decal106-6755

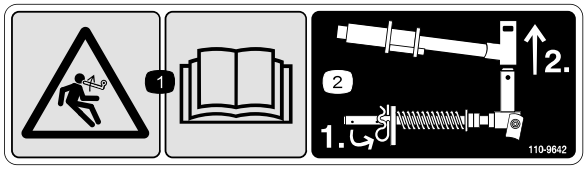
1 Engine coolant under pressure.

2 Explosion hazard—read the *Operator's Manual*.

3 Warning—do not touch the hot surface.

4 Warning—read the *Operator's Manual*.

Decal Part: 110-9642

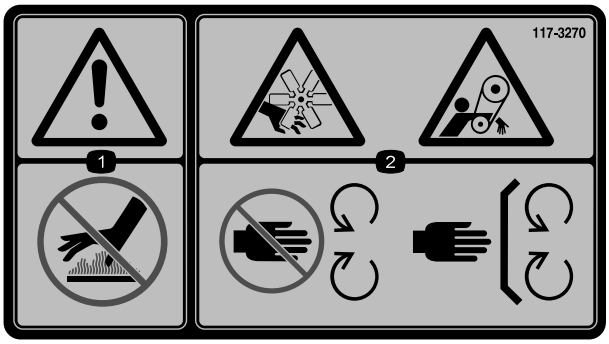


s_decal110-9642

1 Stored energy hazard—read the *Operator's Manual*.

2 Move the cotter pin to the hole closest to the rod bracket and then remove the lift arm and pivot yoke.

Decal Part: 117-3270

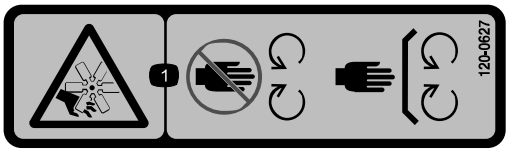


s_decal117-3270

1 Warning—do not touch the hot surface.

2 Cutting/dismemberment hazard, hand; entanglement hazard, belt—stay away from moving parts, keep all guards and shields in place.

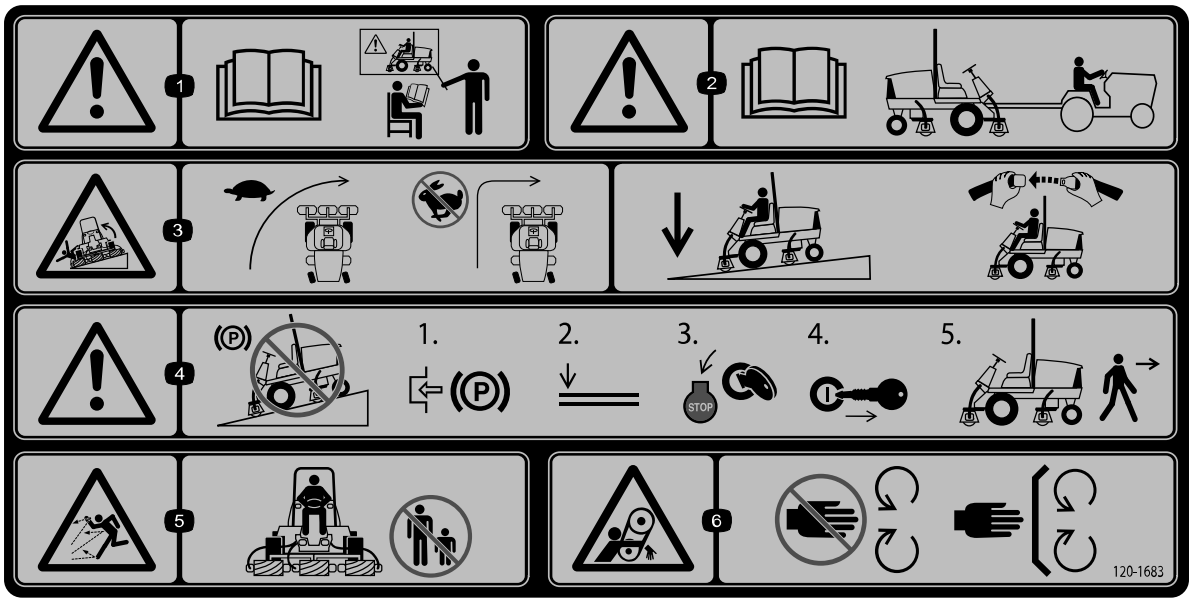
Decal Part: 120-0627



s_decal120-0627

1 Cutting/dismemberment hazard, fan—stay away from moving parts, keep all guards and shields in place.

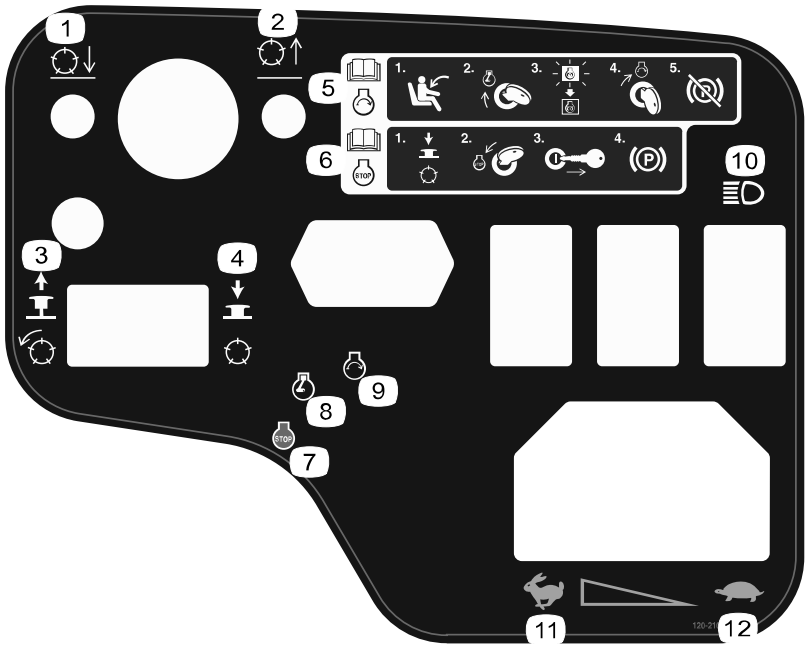
Decal Part: 120-1683



s_decal120-1683

1. Warning—read the *Operator's Manual*; all operators should be trained before operating the machine.
2. Warning—read the *Operator's Manual* before towing the machine.
3. Tipping hazard—drive slowly when turning; do not turn sharply while traveling fast; lower the cutting units when driving down slopes; use a rollover protection system and wear the seatbelt.
4. Warning—do not park the machine on slopes; engage the parking brake, lower the cutting units, shut off the engine, and remove the key before leaving the machine.
5. Thrown object hazard—keep bystanders away.
6. Entanglement hazard, belt—stay away from moving parts; keep all guards and shields in place.

Decal Part: 120-2105

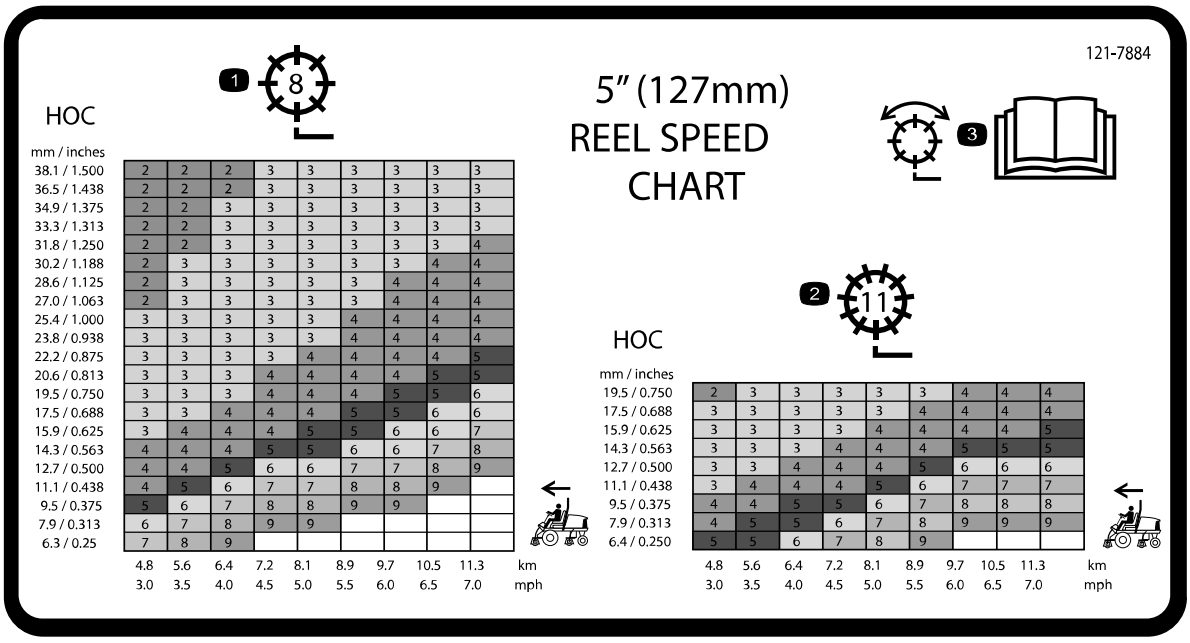


decal120-2105

1. Lower the cutting units.
2. Raise the cutting units.
3. Pull up to engage the cutting units.
4. Push down to disengage the cutting units.
5. Read the *Operator's Manual* for information on starting the engine—sit in the operator's position, turn the key to the engine preheat position, wait until the engine preheat light turns off, turn the key to the engine start position, and disengage the parking brake.
6. Read the *Operator's Manual* for information on stopping the engine—disengage the cutting units, turn the key to the engine stop position, remove the key from the ignition, and engage the parking brake.
7. Engine—Shut off
8. Engine—Preheat
9. Engine—Start
10. Lights
11. Fast
12. Slow

Decal Part: 121-7884

Models 03820 and 03910

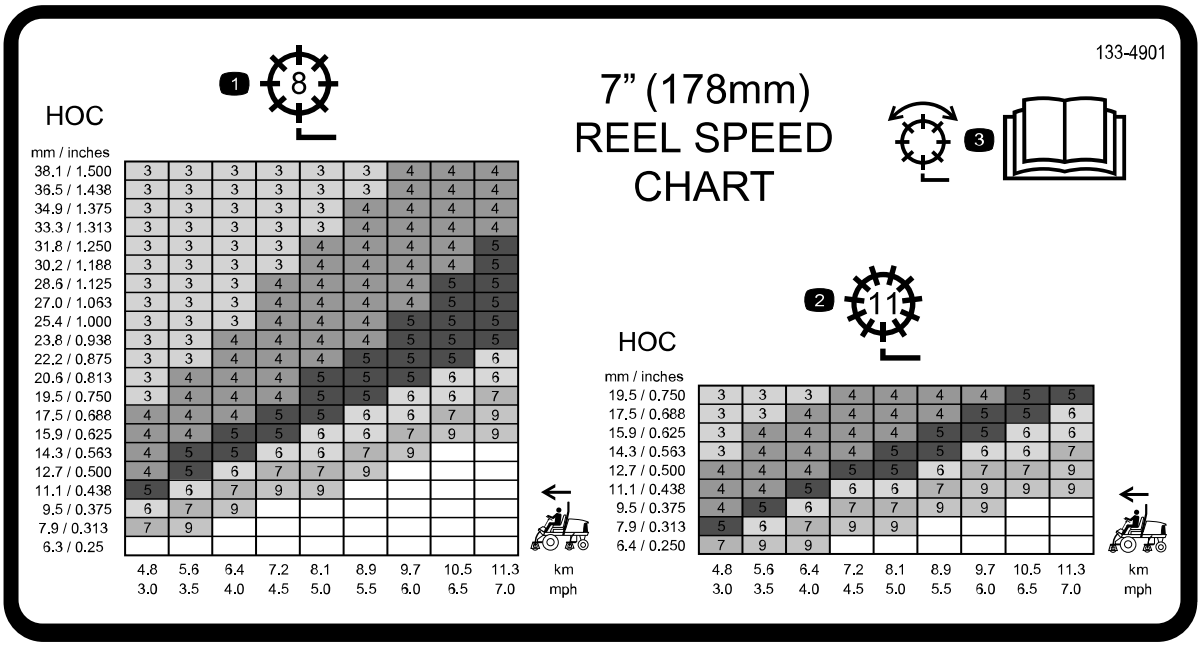


s_decal121-7884

1. 8-blade reel adjustment
2. 11-blade reel adjustment
3. Read the *Operator's Manual* for information on adjusting the reel.

Decal Part: 133-4901

Model 03821

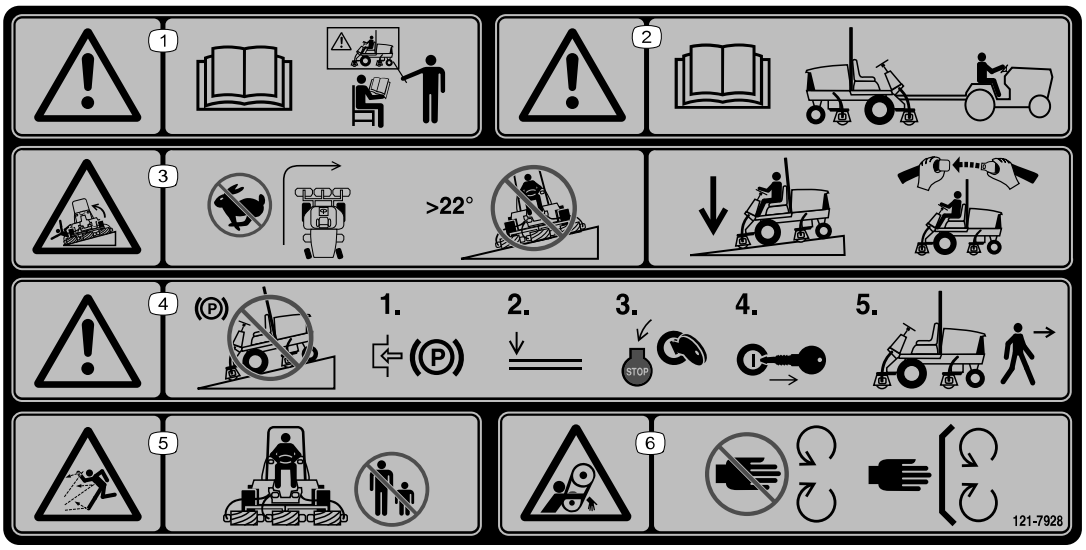


s_decal133-4901

1. 8-blade reel adjustment
2. 11-blade reel adjustment
3. Read the *Operator's Manual* for information on adjusting the reel.

Decal Part: 121-7928

Model 03910; Affix over Part No. 120-1683 for a CE machine

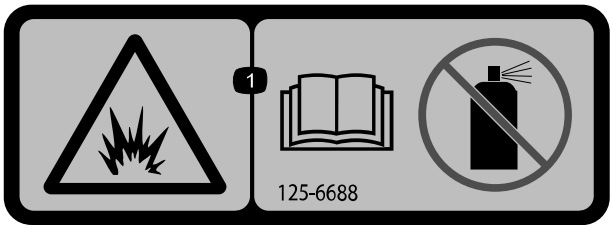


s_decal121-7928

Note: This machine complies with the industry standard stability test in the static lateral and longitudinal tests with the maximum recommended slope indicated on the decal. Review the instructions for operating the machine on slopes in the *Operator's Manual* as well as the conditions in which you would operate the machine to determine whether you can operate the machine in the conditions on that day and at that site. Changes in the terrain can result in a change in slope operation for the machine. If possible, keep the cutting units lowered to the ground while operating the machine on slopes. Raising the cutting units while operating on slopes can cause the machine to become unstable.

1. Warning—read the *Operator's Manual*; all operators should be trained before operating the machine.
2. Warning—read the *Operator's Manual* before towing the machine.
3. Tipping hazard—do not turn sharply while traveling fast; do not drive up or down slopes greater than 22°; lower the cutting units when driving down slopes; use a rollover protection system and wear the seatbelt.
4. Warning—do not park the machine on slopes; engage the parking brake, lower the cutting units, shut off the engine, and remove the key before leaving the machine.
5. Thrown object hazard—keep bystanders away.
6. Entanglement hazard, belt—stay away from moving parts; keep all guards and shields in place.

Decal Part: 125-6688



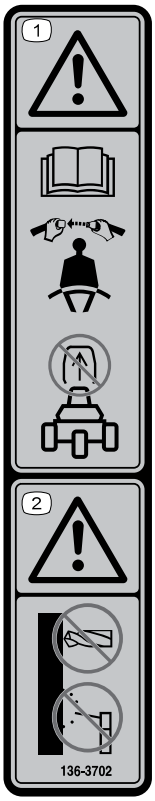
s_decal125-6688

1. Explosion hazard—Read the *Operator's Manual*; Do not use starting fluid.

Decal Part: 133-8062

s_decal133-8062

Decal Part: 136-3702

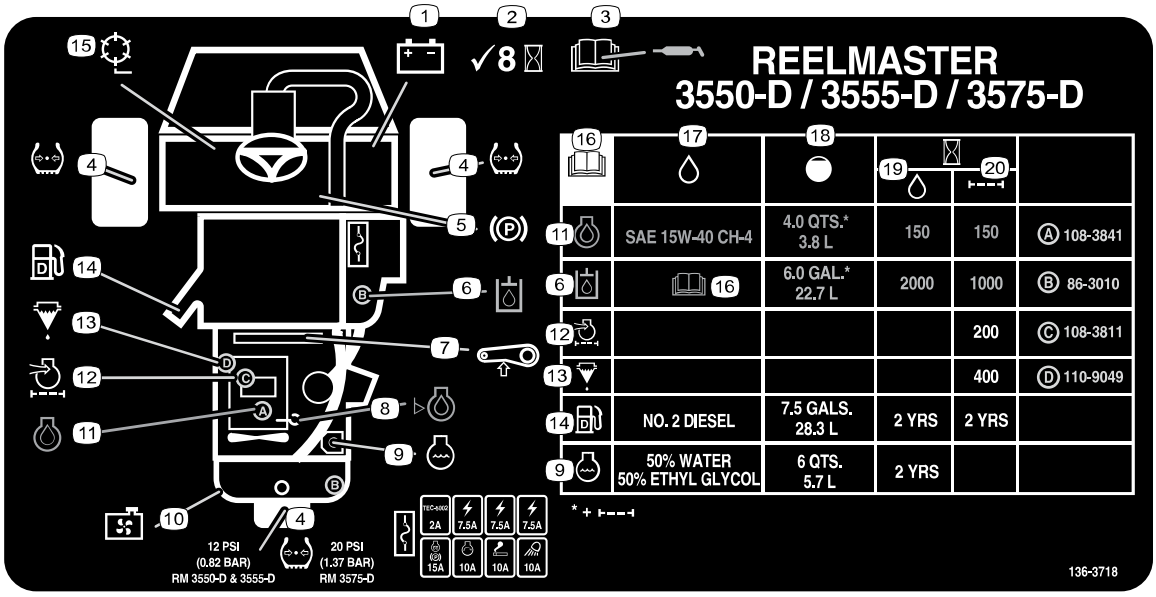


s_decal136-3702

1 Warning—Read the *Operator's Manual*; wear a seatbelt; do not remove the roll bar.

2 Warning—Do not modify the roll bar.

Decal Part: 136-3718

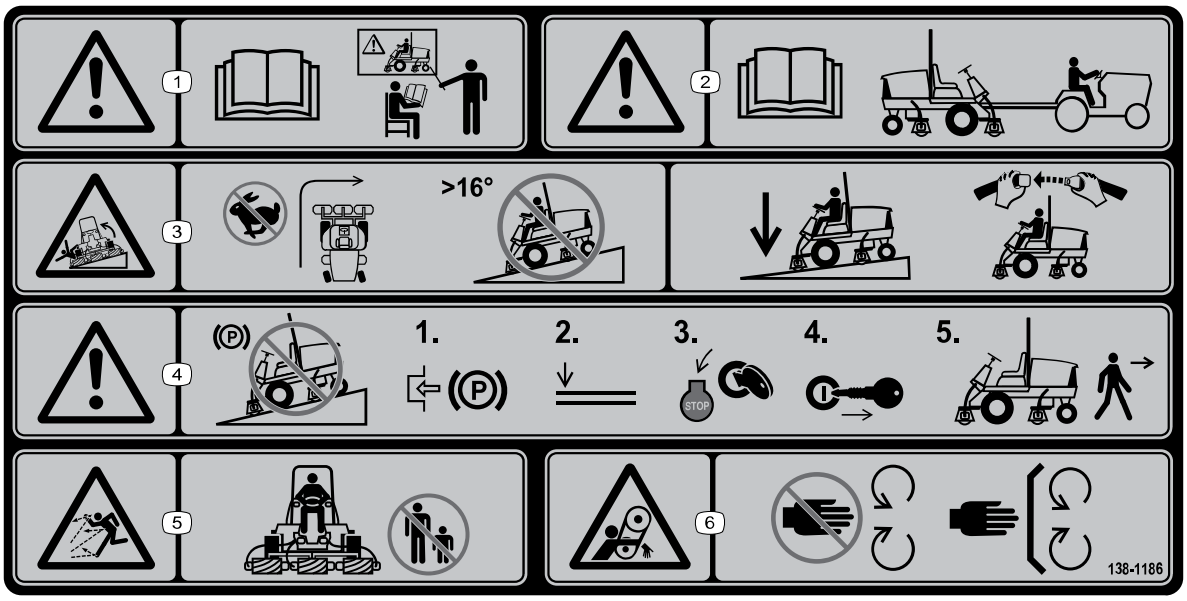


s_decal136-3718

1. Battery
2. Check every 8 hours.
3. Read the *Operator's Manual* for lubrication information.
4. Tire pressure
5. Parking brake
6. Hydraulic fluid
7. Belt
8. Engine oil level
9. Engine coolant
10. Radiator screen
11. Engine oil
12. Engine air filter
13. Fuel/Water separator
14. Fuel
15. Reel speed
16. Read the *Operator's Manual*.
17. Fluids
18. Capacity
19. Fluid interval (hours)
20. Filter interval (hours)

Decal Part: 138-1186

Models 03820 and 03821; Affix over Part No. 120-1683 for a CE machine



s_decal138-1186

Note: This machine complies with the industry standard stability test in the static lateral and longitudinal tests with the maximum recommended slope indicated on the decal. Review the instructions for operating the machine on slopes in the *Operator's Manual* as well as the conditions in which you would operate the machine to determine whether you can operate the machine in the conditions on that day and at that site. Changes in the terrain can result in a change in slope operation for the machine. If possible, keep the cutting units lowered to the ground while operating the machine on slopes. Raising the cutting units while operating on slopes can cause the machine to become unstable.

1. Warning—read the *Operator's Manual*; all operators should be trained before operating the machine.
2. Warning—read the *Operator's Manual* before towing the machine.
3. Tipping hazard—do not turn sharply while traveling fast; do not drive up or down slopes greater than 16°; lower the cutting units when driving down slopes; use a rollover protection system and wear the seatbelt.
4. Warning—do not park the machine on slopes; engage the parking brake, lower the cutting units, shut off the engine, and remove the key before leaving the machine.
5. Thrown object hazard—keep bystanders away.
6. Entanglement hazard, belt—stay away from moving parts; keep all guards and shields in place.

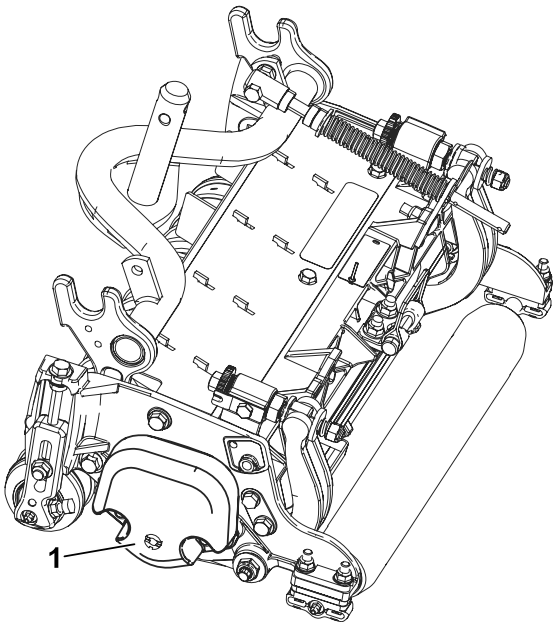
1 Installing the Cutting Units

Parts Required

1	Right hose guide (Models 03820 and 03821)
1	Left hose guide (Models 03820 and 03821)

Preparing the Machine and Cutting Units

1. Park the machine on a level surface, engage the parking brake, shut off the engine, and remove the key.
2. Remove and discard the shipping brackets from the reel motors.
3. Remove the cutting units from the cartons. Assemble and adjust them as described in the cutting unit *Operator's Manual*.
4. Install the counterweight (1) to the appropriate end of the cutting unit as shown.



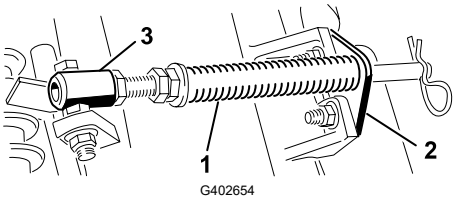
G402653

Positioning the Turf Compensating Spring

All the cutting units are shipped with the turf compensation spring mounted at the right side of the cutting unit. Ensure that the turf compensation spring is mounted to the same side of the cutting unit as the reel drive motor.

Note: When installing or removing the cutting units, ensure that the hairpin cotter is installed in the spring rod hole next to the rod bracket. Otherwise, install the hairpin cotter in the hole in the end of the rod.

1. Remove the 2 carriage bolts and nuts securing the rod bracket to the cutting unit tabs.



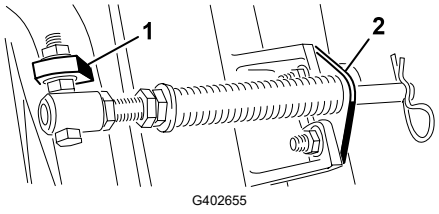
(1) Turf compensation spring

(2) Rod bracket

(3) Spring tube

2. Remove the flange nut securing the spring tube bolt to the carrier frame tab, and remove the assembly.
3. Mount the spring tube bolt to the opposite tab on the carrier frame and secure it with the flange nut.

   Note: Position the bolt head as shown.



(1) Opposite carrier frame tab

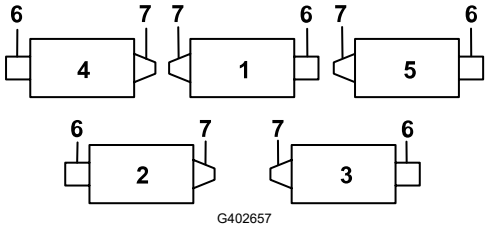
(2) Rod bracket

4. Mount the rod bracket to the cutting unit tabs with the carriage bolts and nuts.

Installing the Hose Guides

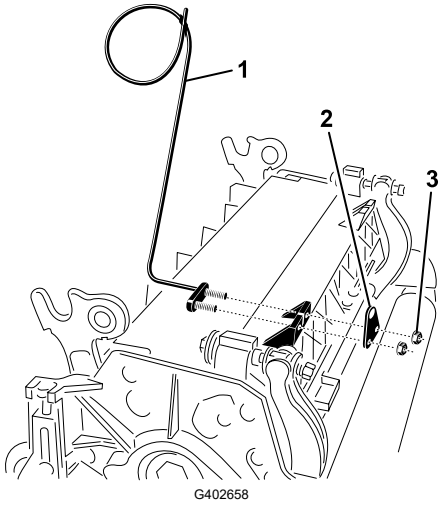
Models 03820 and 03821

On cutting units 4 and 5, install the hose guides as shown.



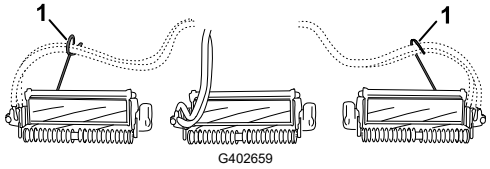
G402657

(1) Cutting unit 1
(2) Cutting unit 2
(3) Cutting unit 3
(4) Cutting unit 4
(5) Cutting unit 5
(6) Reel motor
(7) Weight



G402658

(1) Hose guide (left side shown)
(2) Rod bracket
(3) Nuts



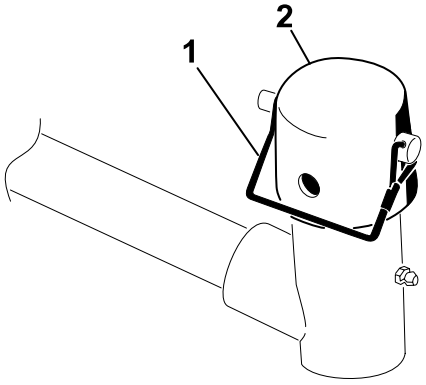
G402659

(1) Hose guides

Aligning the Cutting Units to the Lift Arms

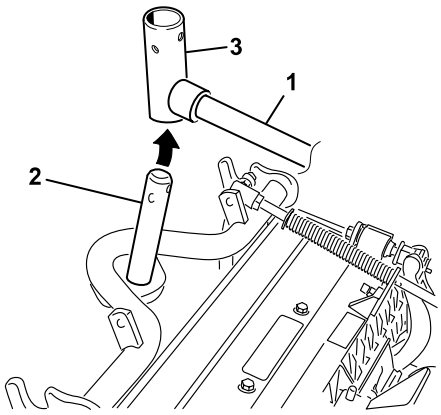
All Front Cutting Units and Any Rear Cutting Units with a 1.2 cm (3/4 inch) or Lower Height of Cut

1. Lower the lift arms.
2. Remove the snapper pin [1] and the cap [2] from the lift-arm pivot yoke.



G409088

3. Slide a cutting unit under the lift arm [1] while inserting the carrier frame shaft [2] up into the lift-arm pivot yoke [3].

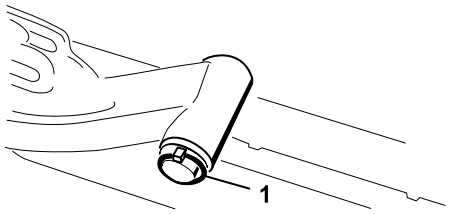


G402671

Aligning the Rear Cutting Units to the Lift Arms

Cutting Units adjusted for a 1.2 cm (3/4 inch) or Higher Height of Cut

1. Remove the lynch pin and washer [1] from the lift-arm pivot shaft and slide the shaft out of the lift arm.
2. Insert the lift-arm yoke onto the carrier frame shaft.
3. Insert the lift-arm shaft into the lift arm and secure it with the washer and lynch pin.



G402672

Assembling the Cutting Units to the Lift Arms

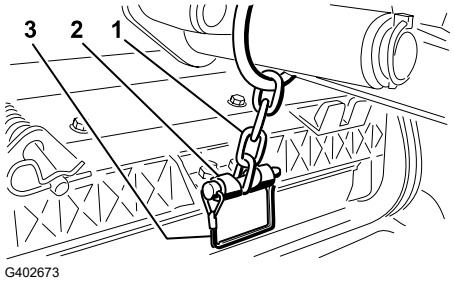
1. Insert the cap over the carrier frame shaft and lift-arm yoke.
2. Secure the cap and the carrier frame shaft to the lift-arm yoke with the snapper pin.

   Note: Use the slot if a steering cutting unit is desired or use the hole if the cutting unit is to be locked in position.

Assembling the Cutting Units to the Lift Arms (continued)

3. Secure the lift-arm chain ① to the chain bracket ② with the snapper pin ③.

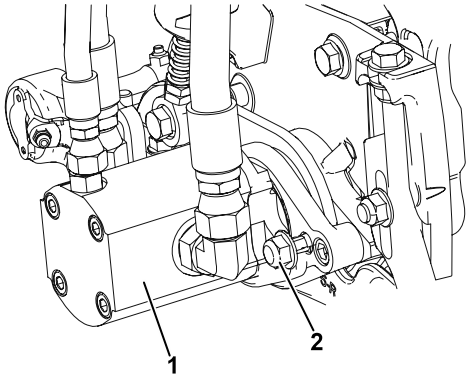
   Note: Use the number of chain links described in the cutting unit *Operator's Manual*.



G402673

Installing the Reel Motors

1. Grease the reel-motor spline shaft.
2. Lubricate the reel-motor O-ring with oil and install it onto the motor flange.
3. Install the reel motor ① by rotating it clockwise so that the reel-motor flanges clear the locknuts ②.



G402674

IMPORTANT

Ensure that the reel motor hoses are not twisted, kinked, or at risk of being pinched.

4. Rotate the reel motor counterclockwise until the flanges encircle the locknuts.

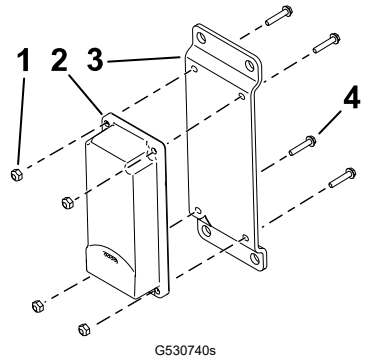
5. Torque the locknuts to **37 to 45 N·m (27 to 33 ft-lb)**.

2 Installing the Telematics Device

Parts Required

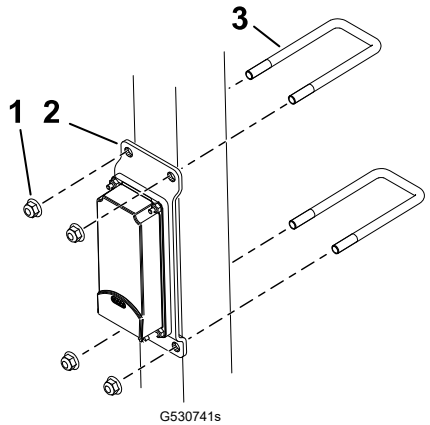
1	Telematics device
1	Device bracket
1	Telematics wire harness
4	Hex-head bolt (#10 x 1 inch)
4	Locknut (#10)
2	U-bolt
4	Flange nut (3/8 inch)

1. Use 4 hex-head bolts (#10 x 1 inch) ④ and 4 locknuts (#10) ① to secure the telematics device ② to the device bracket ③.



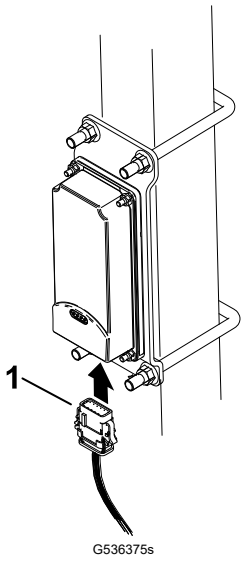
G530740s

2. Use 2 U-bolts ③ and 4 flange nuts (3/8 inch) ① to secure the device bracket ② to the right side of the roll bar.

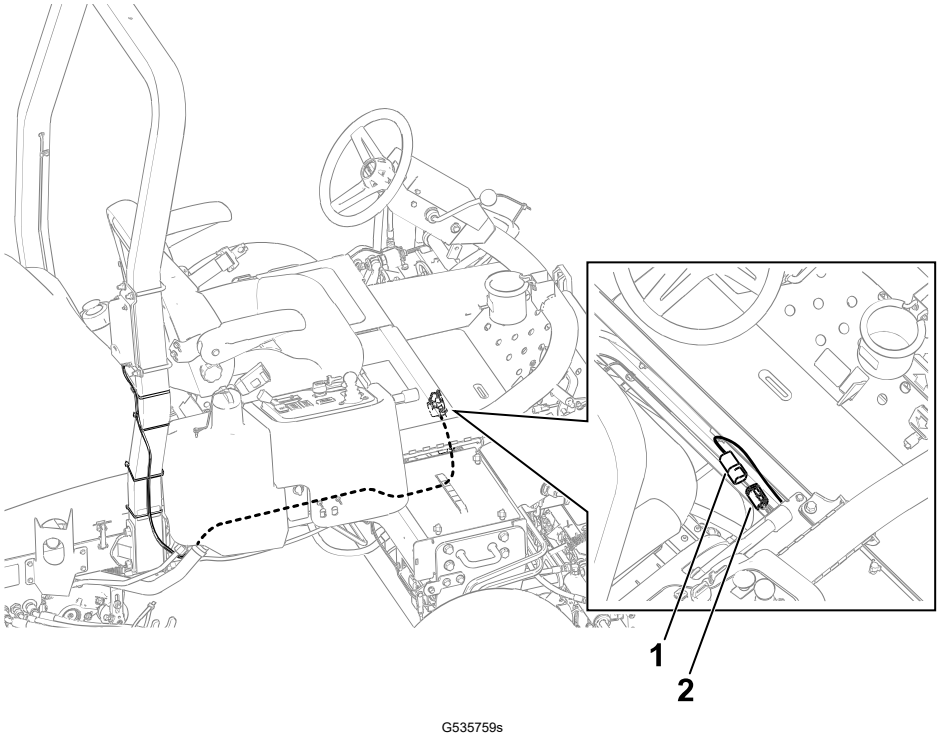


G530741s

3. Install the connector labeled P02 ① on the telematics wire harness to the telematics device.



4. Open the hood.
5. Route the wire harness down the roll bar, beneath the control console, and to the underside of the toolbox cover/footplate as shown.
6. Remove the toolbox cover/footplate for easier access if needed. Retain all hardware.
7. Connect the telematics wire-harness connector labeled P01 ① to the connector on the machine wire harness labeled P45 ②.



8. Install the toolbox cover/footplate with the corresponding hardware, if previously removed.
9. Secure the harness to the roll bar using cable ties as shown.

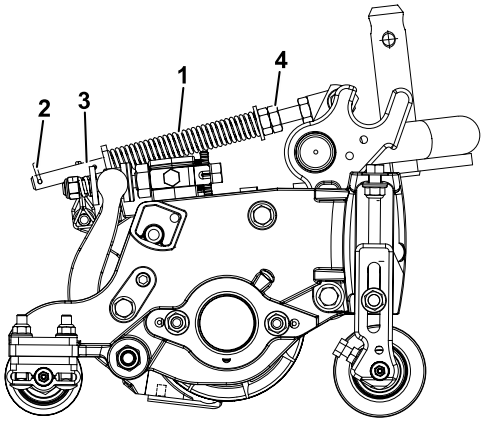
3 Adjusting the Turf-Compensation Spring

The turf-compensation spring transfers weight from the front to the rear roller. This helps to reduce a wave pattern in the turf, also known as marcelling or bobbing.

IMPORTANT

Make spring adjustments with the cutting unit mounted to the traction unit.

1. Align the machine straight ahead and engage the parking brake.
2. Press the cutting-unit-drive switch to the DISENGAGE position.
3. Move the mow/transport slide to the MOW position.
4. Start the engine and push the lower mow/raise lever forward to lower the cutting units.
5. Shut off the engine, remove the key, and wait for all moving parts to stop.
6. Ensure that the hairpin cotter (2) is installed in the rear hole in the spring rod (3).
7. Tighten the hex nuts (4) until the compressed length of the turf-compensation spring (1) is 12.7 cm (5 inches) for 5-inch cutting units and 15.8 cm (6-1/4 inches) for 7-inch cutting units.



G402675

Note: When operating on rough terrain, decrease the spring length by 2.5 cm (1/2 inch). When you decrease spring length, the cutting unit follows the ground less closely.

4 Preparing the Machine

1. Park the machine on a level surface, lower the cutting units, and engage the parking brake.
2. Shut off the engine, remove the key, and wait for all moving parts to stop.
3. Check the tire air pressure and adjust if needed.

   Note: The tires are overinflated for shipping.
4. Check the hydraulic-fluid level.
5. Grease the machine.

   Note: Failure to properly grease the machine will result in premature failure of critical parts.
6. Open the hood and check the coolant level.
7. Check the level of the engine-oil level, and close and latch the hood.

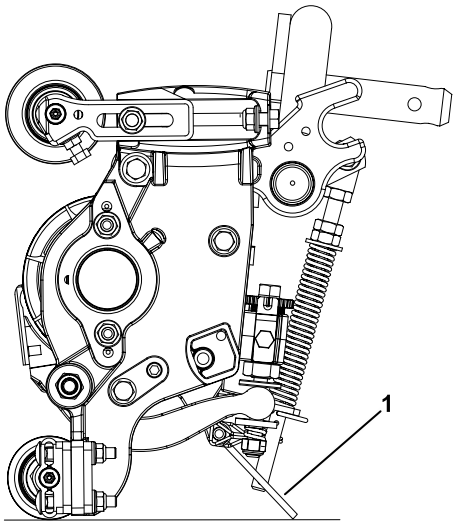
   Note: The engine ships with oil in the crankcase; however, check the oil level before and after the engine is first started.

5 Using the Cutting-Unit Kickstand

Parts Required

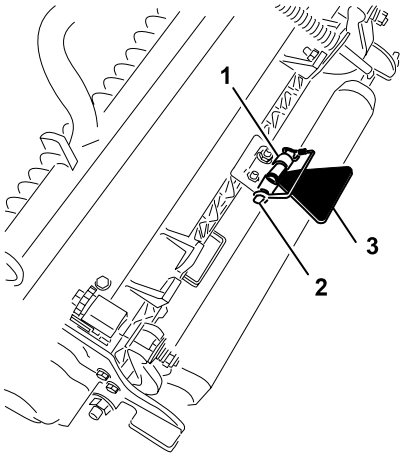
1	Cutting-unit kickstand

1. When tipping a cutting unit to expose the bedknife/reel, prop up the rear of the cutting unit with the kickstand ① to ensure that the nuts on the back end of the bedbar adjusting screws are not resting on the work surface.



G402676

2. Secure the kickstand ③ to the chain bracket ① with the snapper pin ②.



G402677

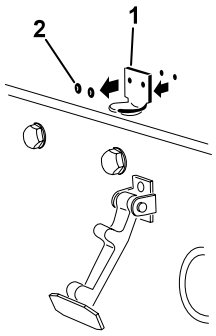
6 Installing the Hood Latch

CE Machines

Parts Required

1	Hood-latch bracket
2	Rivet
1	Washer
1	Screw (1/4 x 2 inches)
1	Locknut (1/4 inch)

1. Unhook the hood latch from the hood-latch bracket.
2. Remove the 2 rivets (2) and the hood-latch bracket (1) from the hood.

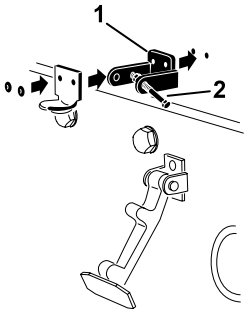


G402590

3. While aligning the mounting holes, position the CE latch bracket (1) and the hood-latch bracket onto the hood.

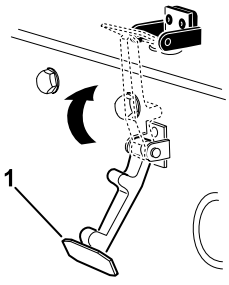
   Note: The latch bracket must be against the hood.

   Do not remove the bolt and nut assembly (2) from the latch-bracket arm.



G402591

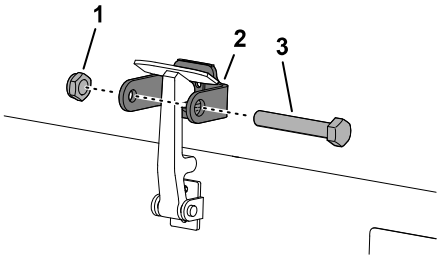
4. Align the washers with the holes on the inside of the hood.
5. Rivet the brackets and the washers to the hood.
6. Hook the latch (1) onto the hood-latch bracket



G402592

7. Screw the bolt 3 into the other arm of hood-latch bracket 2 to lock the latch in position.

   Note: Tighten the nut 1 and bolt until the bolt no longer moves forward and backward in the hood-latch bracket.



G402593

7 Installing the CE Decals

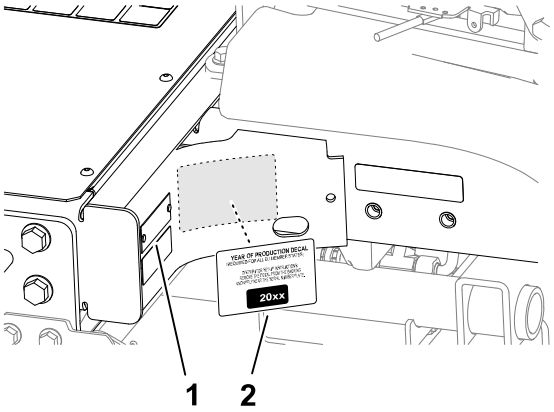
CE Machines

Parts Required

1	Year of production decal
1	CE decal
1	Tilt danger decal

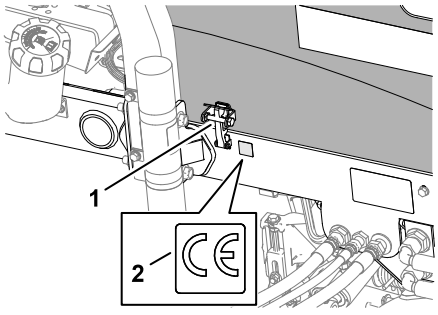
Applying the Year of Production Decal and CE Decal

1. Wipe the left frame, near the model/serial plate 1, with alcohol and allow the frame to dry.
2. Remove the backing and apply the Year of Production decal 2 to the frame near the serial plate.



G411007

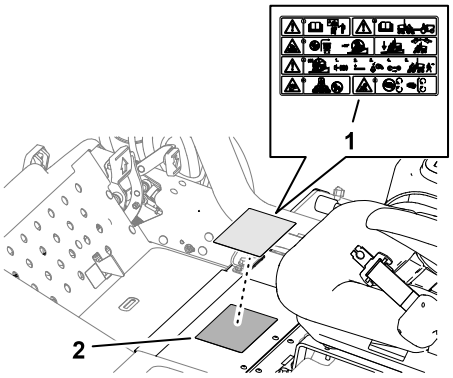
3. Wipe the left frame, near the hood lock 1, with alcohol and allow the frame to dry.
4. Remove the backing and apply the CE decal 2 to the frame.



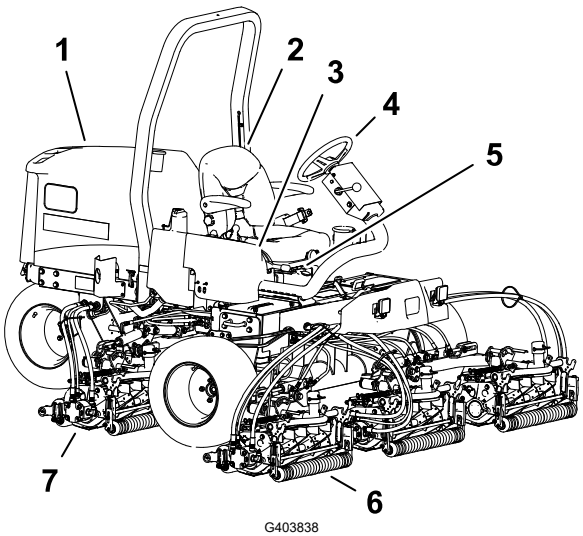
G402596

Applying the Warning Decal

1. Wipe clean the standard warning decal ② with alcohol, and allow the frame to dry.
2. Remove the backing and apply the CE warning decal ① as shown.



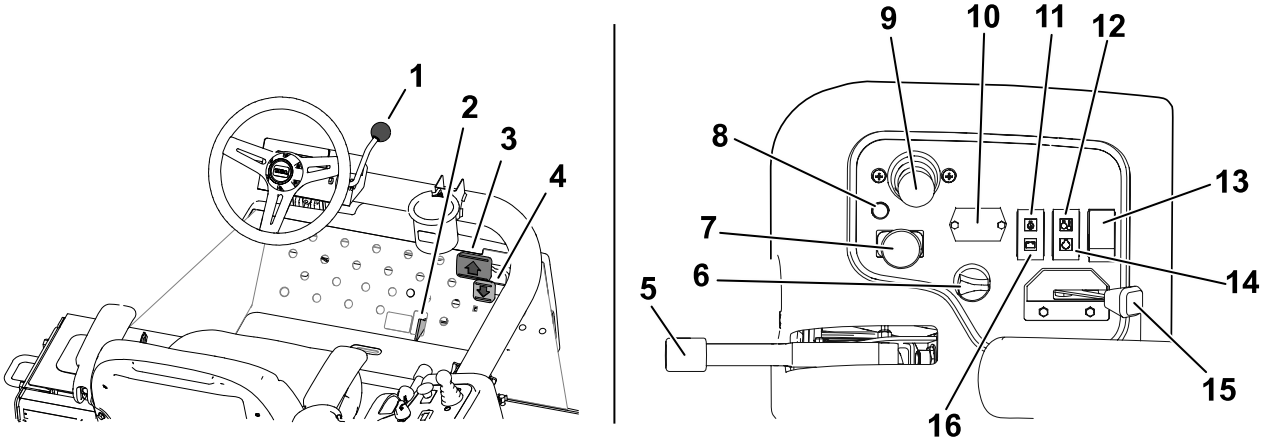
Product Overview



G403838

1. Engine hood
2. Operator's seat
3. Control arm
4. Steering wheel
5. Seat-adjustment lever
6. Front cutting units
7. Rear cutting unit

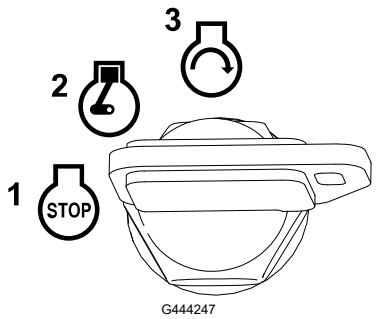
Controls



G450126

1. Tilt-steering lever
2. Mow/transport slide
3. Forward traction pedal
4. Reverse traction pedal
5. Parking brake
6. Ignition switch
7. Cutting unit drive switch
8. Diagnostic light
9. Lower mow/raise control lever
10. Hour meter
11. Oil-pressure light
12. Temperature light
13. Light switch
14. Glow-plug indicator light
15. Throttle
16. Alternator light

Key Switch



G444247

1 Off

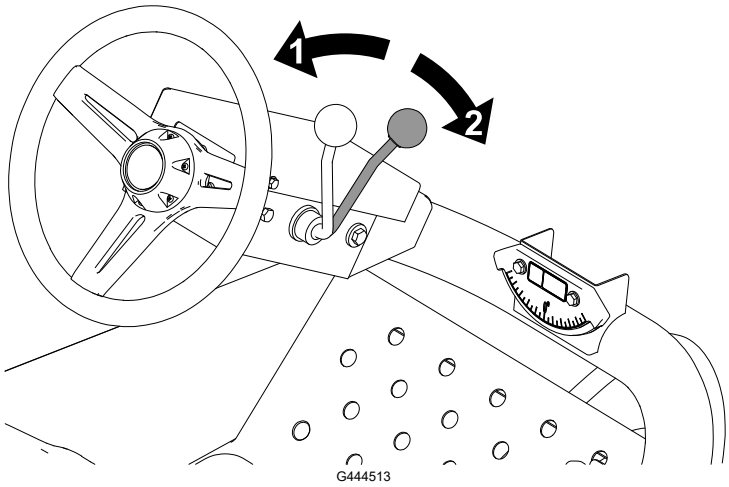
2 Run/preheat the engine

Note: When the key is in the RUN/PREHEAT position, the glow plug energizes and the indicator light illuminates for approximately 7 seconds.

3 Start

Tilt-Steering Lever

Unlock the tilt-steering lever, tilt the steering wheel to the desired position, and lock the lever to secure the position.

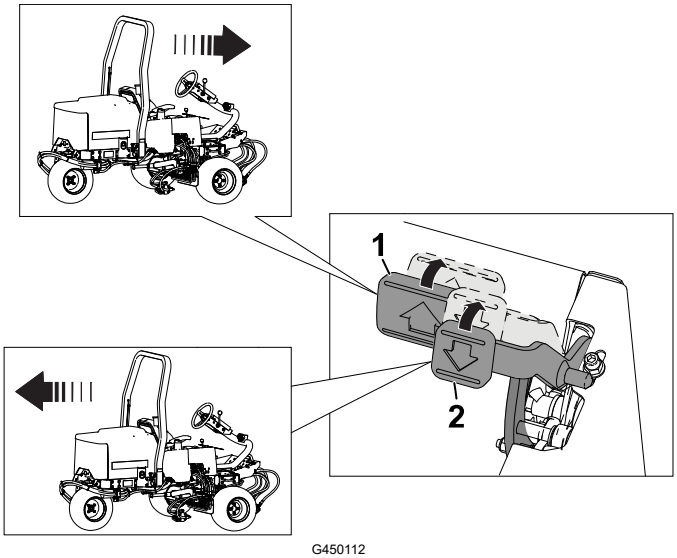


G444513

1 Unlock

2 Lock

Traction Pedals



G450112

1 Move forward—press the forward traction pedal.

2 Move backward (or to assist in stopping when moving forward)—press the reverse traction pedal.

Allow the pedals to move or move them to the Neutral position to stop the machine.

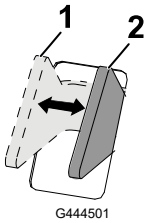
Lower Mow/Raise Control Lever

Use the lower mow/raise lever to lower the cutting units and run reels or raises the cutting units and stop the reels.

You cannot lower the cutting units when the mow/transport lever is in the Transport position.

Note: When the cutting unit drive switch is in the Engage position, you do not need to hold the lever in the forward position while the cutting units are lowered or raised.

Mow/Transport Slide

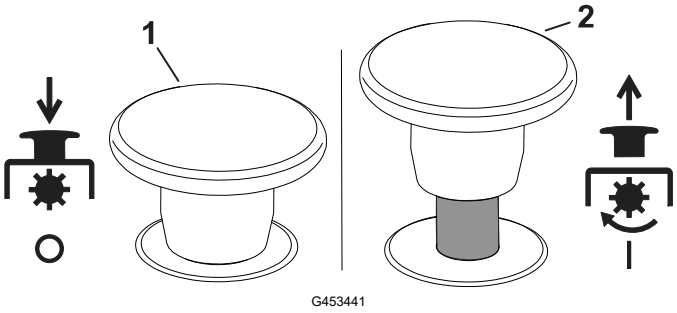


[1] TRANSPORT—move the slide to this position when transporting the machine.

Note: The cutting units do not lower when the slide is in the TRANSPORT position.

[2] MOW—move the slide to this position to operate the cutting units.

Cutting-Unit Drive Switch



[1] Disengage

[2] Engage

Oil Pressure Warning Light

The oil pressure warning light glows if the engine oil pressure drops below a safe level.

Engine Coolant Temperature Warning Light

The temperature warning light illuminates if the engine coolant temperature is high. At this temperature, the cutting units shut off. If the coolant temperature rises another 5.5°C (10°F), the engine shuts off to prevent further damage.

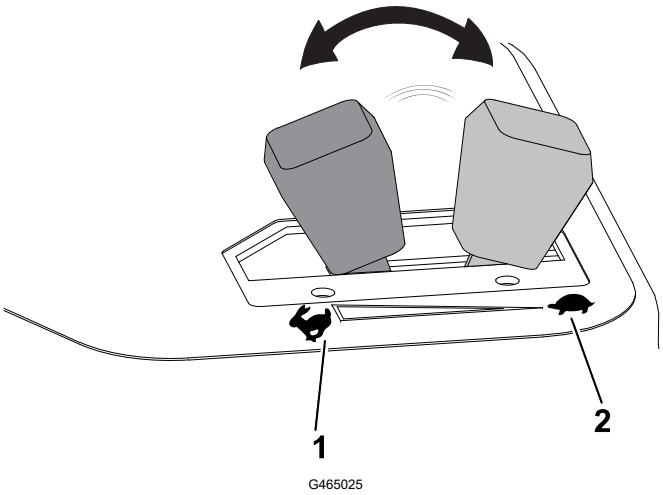
Hour Meter

The hour meter indicates the total hours of machine operation. The hour meter starts to function whenever the key switch is on.

Glow-Plug Indicator Light

The glow-plug indicator light illuminates when the glow plugs are energized.

Throttle



G465025

1. Increase engine speed
2. Decrease engine speed

Alternator Light

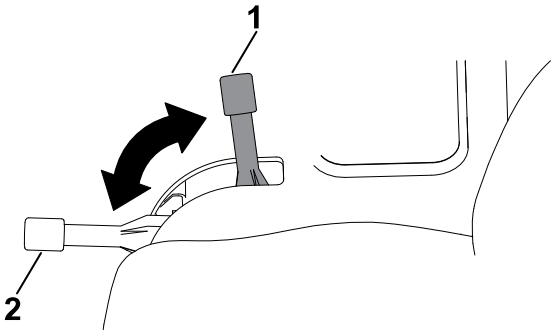
The alternator light shuts off when the engine runs. If the alternator light illuminates while the engine runs, check the charging system and repair it as necessary.

Diagnostic Light

The diagnostic light illuminates if the system recognizes a system fault.

Parking Brake

Whenever the engine is shut off, engage the parking brake to prevent accidental movement of the machine.



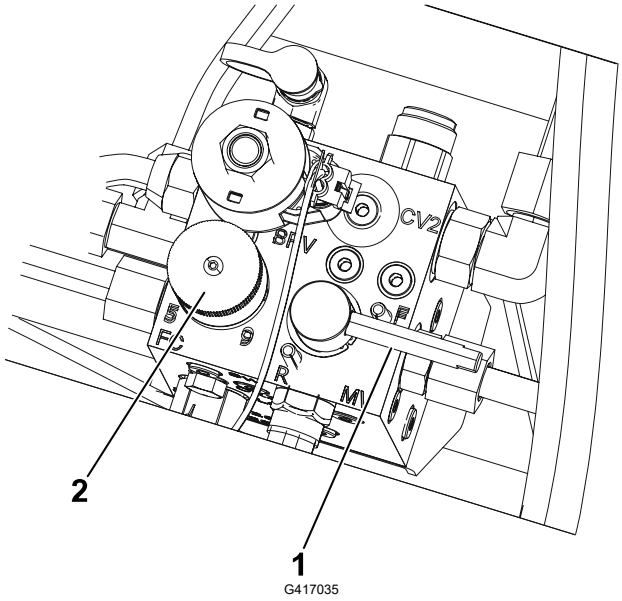
G465039

1. Engaged
2. Disengaged

Note: The engine shuts off if you press the traction pedal with the parking brake engaged.

Mower Manifold

The mower manifold is located under the platform cover.



(1) Backlap control

(2) Reel speed control

Reel Speed Knob

Use the reel speed knob of the mower manifold to adjust the clip rate (reel speed) of the cutting units.

Turn the reel speed knob counterclockwise to increase the reel speed; turn the knob clockwise to slow the reel speed.

Refer to Clip Rate (Reel Speed), page 5–8 and Setting the Reel Speed, page 5–9 for information on how to adjust the reel speed control.

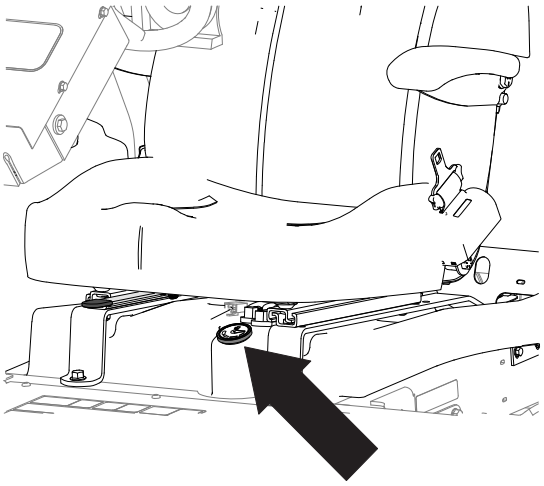
Backlap Control

The backlap lever controls the direction the cutting units rotate when you are mowing or when you backlap the reels and bedknives.

Rotate the backlap lever to the F position when mowing; rotate the lever to the R position when backlapping the cutting units.

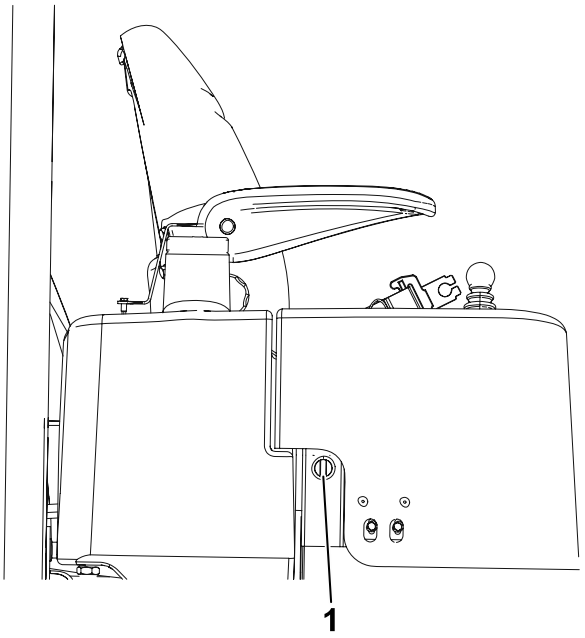
Note: Do not change the backlap lever position while the reels are rotating.

Fuel Gauge



G465051

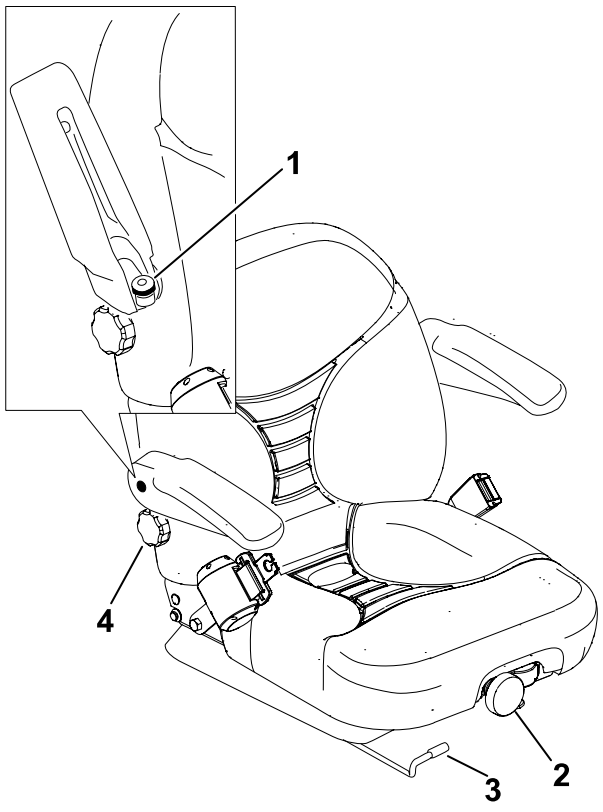
Power Point



G529324

The power point 1 is a 12 V power supply for electronic devices.

Seat Controls



G529311

1. Armrest-adjusting knob
2. Seat-suspension knob
3. Seat-position adjustment lever
4. Backrest knob

Seat-Position Adjustment Lever

The seat can move forward and backward. Position the seat where you have the best control of the machine and are most comfortable.

1. Move the lever sideways to unlock the seat.
2. Slide the seat to the desired position and release the lever to lock it in position.

Seat-Suspension Knob

You can adjust the seat to provide a smooth and comfortable ride. Position the seat where you are most comfortable.

To adjust the seat, turn the seat-suspension knob in either direction to provide the best comfort.

Backrest Knob

You can adjust the back of the seat to provide a comfortable ride. Position the back of the seat where it is most comfortable.

To adjust the seat back, turn the backrest knob under the right armrest, in either direction, to provide the best comfort.

Seat Controls (continued)

Armrest-Adjusting Knob

You can adjust the armrests to provide a comfortable ride. Position the armrests where they are most comfortable.

Raise the armrest and turn the armrest-adjusting knob, in either direction, to provide the best comfort.

Specifications

Note: Specifications and design are subject to change without notice.

Dimensions	Reelmaster 3550	Reelmaster 3555	Reelmaster 3575
Width of Cut	208 cm (82 inches)	254 cm (100 inches)	254 cm (100 inches)
Overall Width	239 cm (94 inches)	284 cm (112 inches)	284 cm (112 inches)
Transport Width	231 cm (91 inches)	231 cm (91 inches)	231 cm (91 inches)
Overall Length	295 cm (110 inches)	267 cm (105 inches)	267 cm (105 inches)
Height to top of ROPS	188 cm (74 inches)	201 cm (79 inches)	206 cm (81 inches)
Wheelbase	151 cm (59.5 inches)	152 cm (60 inches)	152 cm (60 inches)
Weight (configured)	900 kg (1,985 lb)	1034 kg (2,280 lb)	1157 kg (2,550 lb)
Weight (no cutting units)	708 kg (1,560 lb)	751 kg (1,655 lb)	796 kg (1,755 lb)
Fuel tank capacity	28 L (7.5 US gallons)	28 L (7.5 US gallons)	28 L (7.5 US gallons)

Attachments/Accessories

A selection of Toro approved attachments and accessories is available for use with the machine to enhance and expand its capabilities. Contact your Authorized Service Dealer or authorized Toro distributor or go to www.Toro.com for a list of all approved attachments and accessories.

To ensure optimum performance and continued safety certification of the machine, use only genuine Toro replacement parts and accessories.

Before Operation

Performing Daily Maintenance

Before starting the machine each day, perform the Each Use/Daily procedures listed in the Maintenance Schedule.

Fuel

Fuel Specifications

IMPORTANT

Never use kerosene or gasoline instead of diesel fuel.

Petroleum Diesel

Type	Use summer grade diesel fuel (No. 2-D) at temperatures above -7°C (20°F) and winter grade (No. 1-D or No. 1-D/2-D blend) below that temperature. Use of winter grade fuel at lower temperatures provides lower flash point and cold flow characteristics which eases starting and reduces fuel filter plugging. Use of summer grade fuel above -7°C (20°F) contributes toward longer fuel pump life and increased power compared to winter grade fuel.
Sulfur content	Low (<500 ppm) or ultra low (<15 ppm)
Minimum Cetane Rating	40
Storage	Acquire only enough clean, fresh diesel fuel or biodiesel fuel that you will consume within 180 days. Do not use fuel that has been stored for more than 180 days.
Oil and additives	Do not add to the fuel

Fuel (continued)

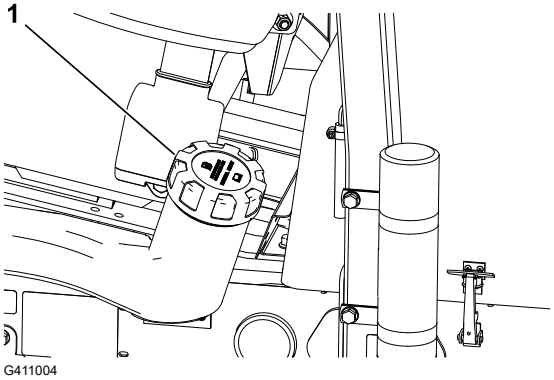
Biodiesel

Type	This machine can also use a biodiesel-blended fuel of up to B20 (20% biodiesel, 80% petroleum diesel). The petroleum diesel portion should be low or ultra low sulfur. Use B5 (biodisel content of 5%) or lesser blends in cold weather
Minimum Cetane Rating	40
Biodiesel Precautions	Painted surfaces may be damaged by biodiesel blends. Monitor seals, hoses, gaskets in contact with fuel as they may degrade over time. Fuel filter plugging may be expected for a time after converting to biodiesel blended. For more information on biodiesel, contact your authorized Toro distributor.
Storage	Acquire only enough clean, fresh diesel fuel or biodiesel fuel that you will consume within 180 days. Do not use fuel that has been stored for more than 180 days.
Oil and additives	Do not add to the fuel

	Standard	**Location**
Biodiesel fuel must meet:	ASTM D6751	USA
	EN 14214	European Union
Blended fuel must meet:	ASTM D975	USA
	EN 590	European Union

Adding Fuel

1. Park the machine on a level surface, lower the cutting units, engage the parking brake, shut off the engine, and remove the key.
2. Clean the area around the fuel-tank cap (1).
3. Remove the fuel-tank cap.
4. Fill the tank with fuel up to the filler neck.
5. Install the cap and wipe up any spilled fuel.



Checking the Interlock Switches

CAUTION

If safety interlock switches are disconnected or damaged, the machine could operate unexpectedly, resulting in minor or moderate injury.

- **Do not tamper with the interlock switches.**
- **Check the operation of the interlock switches daily and replace any damaged switches before operating the machine.**

IMPORTANT

If your machine fails any of the interlock switch checks, contact your authorized Toro distributor.

Preparing the Machine

1. Drive the machine slowly to an open area.
2. Lower the cutting units, shut off the engine, and engage the parking brake.

Checking the Traction Pedal Start-Interlock

1. Sit in the operator's seat and engage the parking brake.
2. Disengage the cutting-unit-drive switch.
3. Press the traction pedal and rotate the key to the START position.

Note: The starter should not crank the engine with the traction pedal pressed.

Checking the Cutting Unit Drive Switch Start-Interlock

1. Sit in the operator's seat and engage the parking brake.
2. Engage the cutting-unit-drive switch.
3. Ensure your foot is off the traction pedal and rotate the key to the START position.

Note: The starter should not crank the engine with the cutting-unit-drive switch in the ENGAGE position.

Checking the Lower Mow/Raise Lever and Starter Start-Interlock

1. Sit in the operator's seat and engage the parking brake.
2. Disengage the cutting-unit-drive switch.
3. Ensure your foot is off the traction pedal.
4. Hold the lower mow/raise lever forward and rotate the key to the START position.

Checking the Interlock Switches (continued)

Note: The starter should not crank the engine while holding the mow/raise lever forward.

Checking the Parking Brake and Seat Run-Interlock

1. Sit in the operator's seat and engage the parking brake.
2. Disengage the cutting-unit-drive switch.
3. Ensure your foot is off the traction pedal and start the engine.
4. Disengage the parking brake.
5. Rise off the operator's seat.

Note: The engine should shut off if you are out of the operator's seat and the parking brake is disengaged.

Checking the Parking Brake and Traction Pedal Run-Interlock

1. Sit in the operator's seat and engage the parking brake.
2. Disengage the cutting-unit-drive switch.
3. Keep your foot off the traction pedal and start the engine.
4. Press the traction pedal.

Note: The engine should shut off if the parking brake is engaged and the traction pedal is pressed.

Checking the Seat and Traction Pedal Run-Interlock

1. Sit in the operator's seat and engage the parking brake.
2. Disengage the cutting-unit-drive switch.
3. Keep your foot off the traction pedal and start the engine.
4. Disengage the parking brake.
5. Rise off the operator's seat.
6. Press the traction pedal.

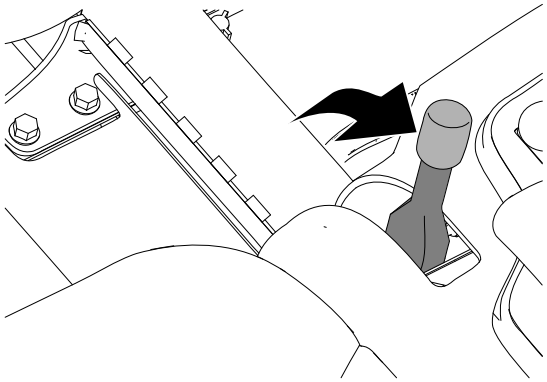
Note: The engine should shut off if you are out of the operator's seat and press the traction pedal.

Checking the Parking Brake

1. Start the engine, raise the cutting units, disengage the parking brake, and move the machine to an open flat area.
2. Engage the parking brake as shown.
3. Press the traction pedal to move the machine forward.

   Note: If the machine moves forward with the parking brake engaged, adjust parking brake.

   Note: Moving the machine forward with the parking brake engaged will cause the engine to shut off.



G411005

4. If you adjusted the parking brake, repeat steps 2 and 3.

   Note: If the machine moves forward with the parking brake engaged: service the parking brakes, check left and right brake linkage for damage, and check the brake lever pivot for damage.
5. Shut off the engine, remove the key, and wait for all moving parts to stop before leaving the operator's seat.

During Operation

Starting the Engine

IMPORTANT

You must bleed the fuel system before starting the engine if you are starting the engine for the first time, the engine has shut off due to lack of fuel, or you have performed maintenance on the fuel system; refer to Bleeding the Fuel System, page 5–12.

1. Ensure that the parking brake is engaged, and the cutting-unit-drive switch is in the DISENGAGE position.
2. Remove your foot from the traction pedal and ensure that the pedal is in the neutral position.
3. Move the throttle lever to the 1/2 throttle position.
4. Insert the key into the switch and rotate it to the ON/PREHEAT position until the glow plug indicator light shuts off (approximately 7 seconds); then rotate the key to the START position to engage the starter motor. Release the key when the engine starts.

   Note: The key moves automatically to the ON/RUN position.

Starting the Engine (continued)

IMPORTANT

To prevent overheating of the starter motor, do not engage the starter longer than 15 seconds. After 10 seconds of continuous cranking, wait 60 seconds before engaging the starter motor again.

5. When the engine is started for the first time or after an overhaul of the engine, operate the machine in forward and reverse for 1 to 2 minutes. Also operate the lift lever and cutting-unit-drive switch to ensure proper operation of all parts.

   Note: Turn the steering wheel to the left and right to check the steering response, then shut the engine off and check for oil leaks, loose parts, and any other wear or damage.

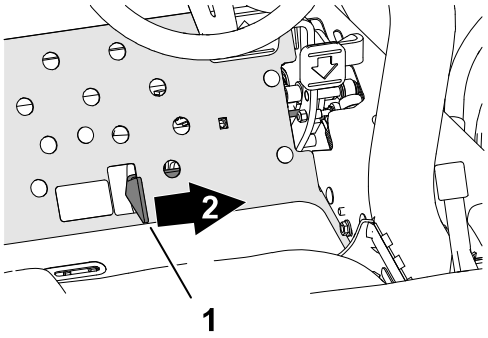
⚠ CAUTION ⚠

Checking for oil leaks, loose parts, and other malfunctions could result in minor or moderate injury.

Shut off the engine and wait for all moving parts to stop before checking for oil leaks, loose parts, and other malfunctions.

Shutting Off the Engine

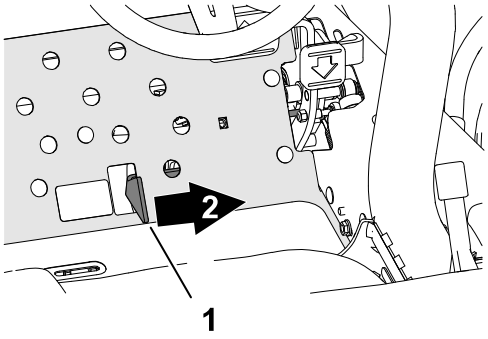
1. Move the throttle control to the IDLE position.
2. Engage the parking brake.
3. Move the cutting-unit-drive switch to the DISENGAGE position.
4. Move the mow/transport slide (1) to the MOW (2) position as shown.
5. Use the lower mow/raise control lever to lower the cutting units.
6. Shut off the engine, remove the key, and wait for all moving parts to stop.



G411277

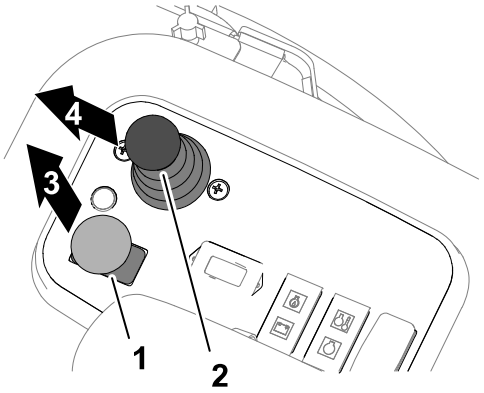
Cutting Grass with the Machine

1. Start the engine and move the throttle to the FAST position.
2. Move the mow/transport slide ① to the right to the MOW ② position.



G411277

3. Press the cutting-unit-drive switch ① to the ENGAGE ③ position.
4. Push the lower mow/raise ② lever forward to lower and run the cutting units (the front cutting units are timed to lower before the rear cutting units).
5. Press the traction pedal forward to drive forward and cut grass.
6. Momentarily pull the lower mow/raise lever to raise the cutting units at the end of a cutting pass so that you can align the machine for the next cutting pass.

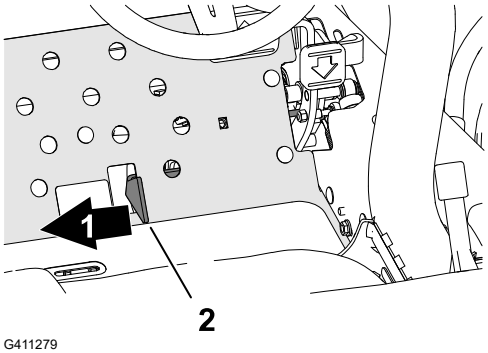


G411278

Note: Push the lower mow/raise lever forward again to lower ④ and run the cutting units.

Driving the Machine in Transport Mode

1. Move the cutting-unit-drive switch to the DISENGAGE position.
2. Raise the cutting units to the transport position.
3. Move the mow/transport slide ② left to the TRANSPORT ① position.



G411279

IMPORTANT

Be careful when driving between objects so that you do not accidentally damage the machine or the cutting units. Use extra care when operating the machine on slopes. Drive slowly and avoid sharp turns on slopes to prevent rollovers.

Driving the Machine in Transport Mode (continued)

Note: You cannot lower the cutting units while operating the machine the transport mode.

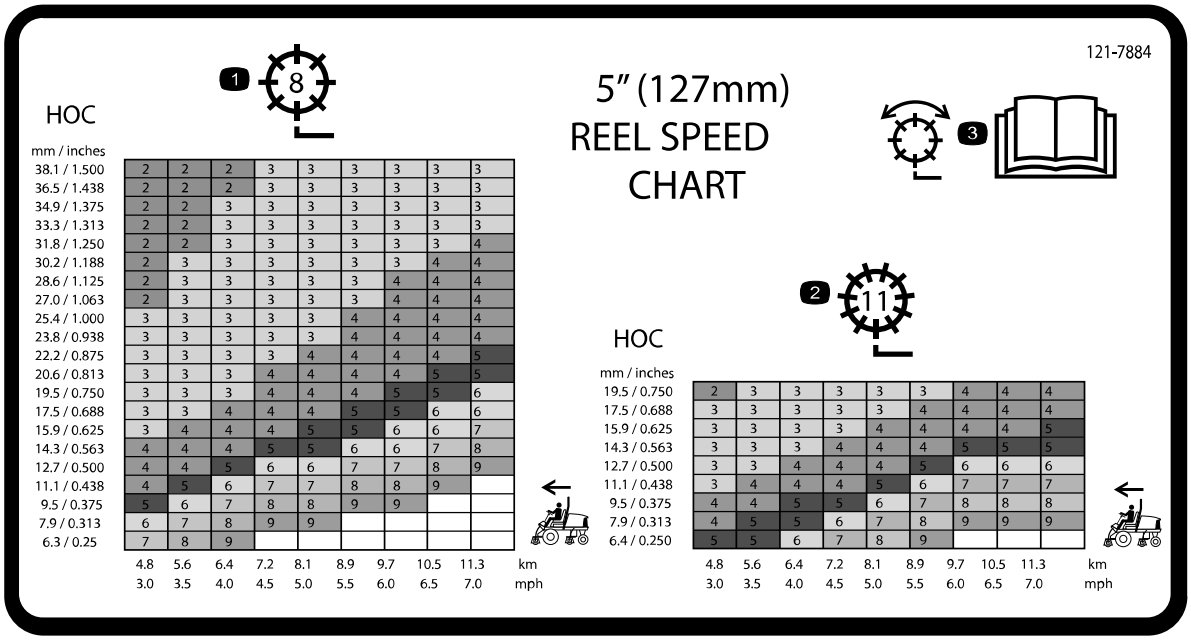
Clip Rate (Reel Speed)

To achieve a consistent, high quality-of-cut and a uniform after-cut appearance, it is important to match the reel speed to the height of cut.

IMPORTANT

If the reel speed is too slow, you may notice visible clip marks. If the reel speed is too fast, the cut may have a fuzzy appearance.

Models 03820 and 03910

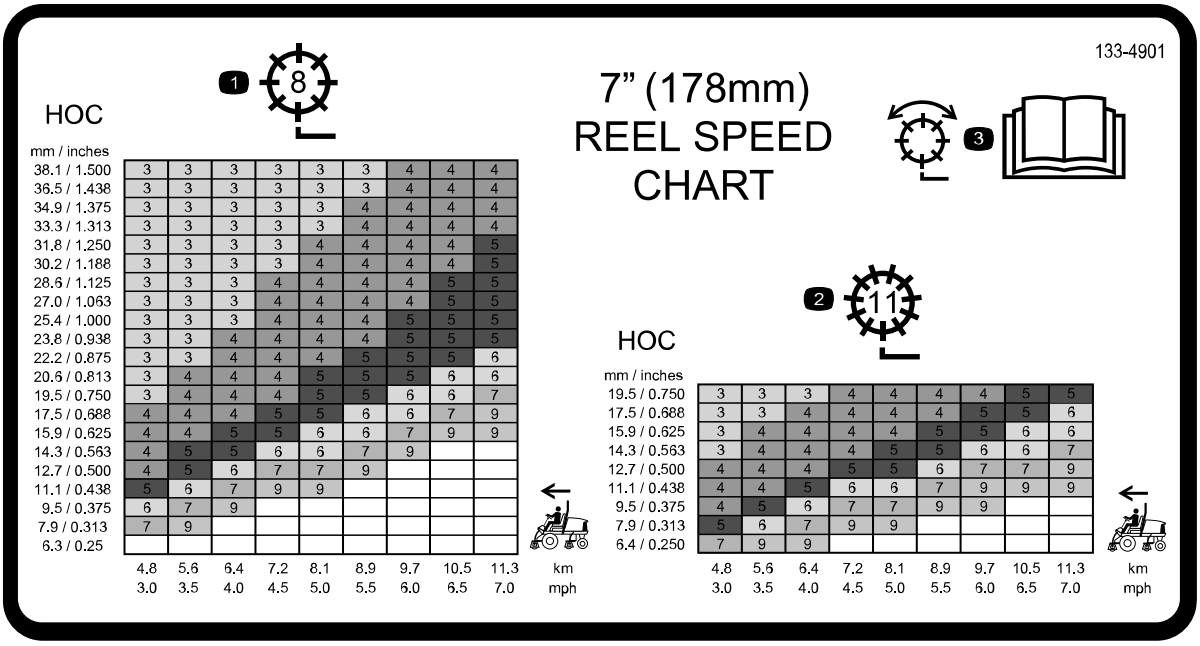


G447075

1. 8-blade reel adjustment
2. 11-blade reel adjustment
3. Read the *Operator's Manual* for information on adjusting the reel.

Clip Rate (Reel Speed) (continued)

Model 03821



G447074

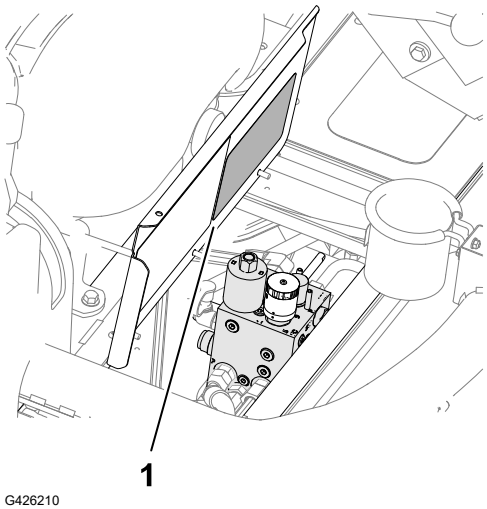
1. 8-blade reel adjustment
2. 11-blade reel adjustment
3. Read the *Operator’s Manual* for information on adjusting the reel.

Setting the Reel Speed

To achieve a consistent, high quality of cut and a uniform after-cut appearance, you must set the reel speed controls (located under the seat) correctly.

1. Select the height of cut at which the cutting units are set.
2. Choose the desired ground speed best suited for conditions.
3. Use the graph on the reel speed chart decals 1 to determine the proper reel-speed setting.

   Note: Take note of the reel-speed number.
4. Open the platform cover.



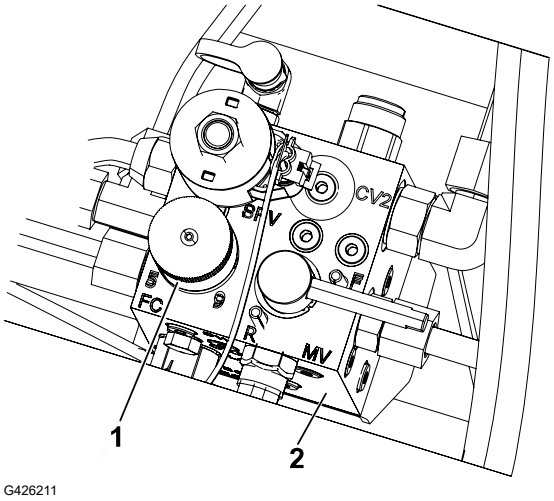
G426210

Setting the Reel Speed (continued)

5. Rotate the reel-speed-control knob ① of the mower manifold ② until the indicator arrow is in line with the reel-speed number that you determined in step 3.

   Note: You can increase or decrease the reel speed to compensate for turf conditions. When using baskets, increase the reel speed to improve collection performance.

6. Close the platform cover.



G426211

Adjusting the Lift-Arm Counterbalance

For Models 03820 and 03821 Only

You can adjust the counterbalance on the lift arms of the rear cutting units to compensate for different turf conditions and to maintain a uniform height of cut in rough conditions or in areas of thatch buildup.

You can adjust each counterbalance spring to 1 of 4 settings. Each increment increases or decreases counterbalance on the cutting unit by 2.3 kg (5 lb). You can position the springs on the back side of the first spring actuator to remove all counterbalance (fourth position).

1. Park the machine on a level surface, lower the cutting units, engage the parking brake, shut off the engine, and remove the key from the ignition switch.
2. Insert a tube or similar object onto the long spring end to relieve the spring tension during the adjustment.

⚠ CAUTION ⚠

The springs are under tension, and adjusting them could result in minor or moderate personal injury.

Use caution when adjusting the springs.

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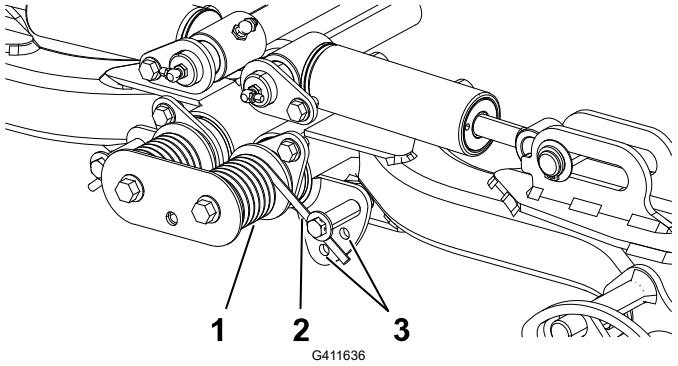
3. While relieving the spring tension, remove the bolt and locknut securing the spring actuator to the bracket.

Adjusting the Lift-Arm Counterbalance (continued)



1. Spring
2. Spring actuator
3. Additional hole locations

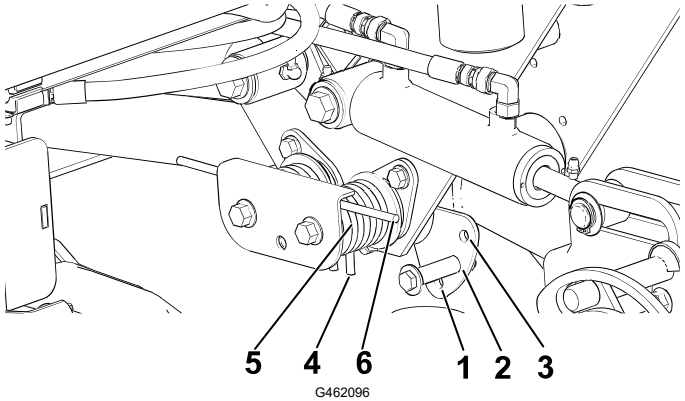
4. Move the spring actuator to the desired hole location and secure it with the bolt and the locknut.
5. Repeat the procedure on the remaining spring.

Adjusting the Lift-Arm Down Pressure

You can adjust the configuration of the springs on the lift arms of the rear cutting units to provide down pressure. This is to compensate for different turf conditions where more downward force is needed.

To change to the down pressure configuration, the catch plate must be removed in order to switch the two springs from one side and the short leg of spring must now ride up against the top lip of the catch assembly.

You can adjust the downward pressure spring to 1 of 4 settings. Each increment increases or decreases down pressure on the cutting unit by 2.3 kg (5 lb). You can position the springs on the back side of the first spring actuator to remove all down pressure (fourth position).



1. Position 1
2. Position 2
3. Position 3
4. Position 4
5. Spring
6. Spring actuator

Adjusting the Lift-Arm Down Pressure (continued)

1. Park the machine on a level surface, lower the cutting units, engage the parking brake, shut off the engine, and remove the key from the ignition switch.
2. Insert a tube or similar object onto the long spring end to relieve the spring tension during the adjustment.

CAUTION

The springs are under tension, and adjusting them could result in minor or moderate personal injury.

Use caution when adjusting the springs.

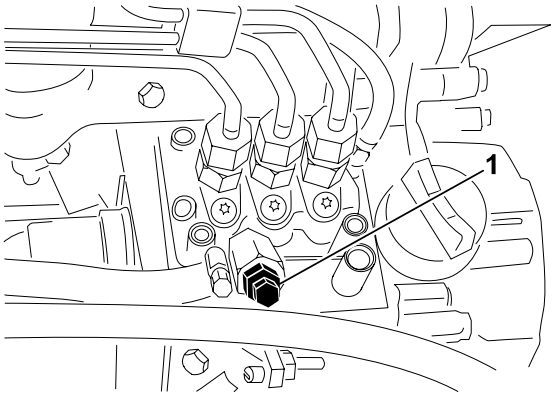
---

3. While relieving the spring tension, remove the bolt and locknut securing the spring actuator to the bracket.
4. Move the spring actuator to the desired hole location and secure it with the bolt and the locknut.
5. Repeat the procedure on the remaining spring.

Bleeding the Fuel System

1. Park the machine on a level surface, lower the cutting units, engage the parking brake, shut off the engine, and remove the key.
2. Ensure that the fuel tank is at least half full.
3. Unlatch and raise the hood.
4. Open the air-bleed screw (1) on the fuel-injection pump.
5. Turn the ignition key to the ON position.

   Note: The electric fuel pump runs, forcing air out around the air-bleed screw.
6. Tighten the screw and turn the ignition key to the OFF position.



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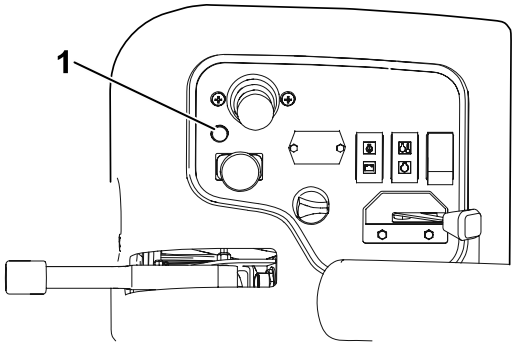
Note: The engine should start after you follow this procedure. If the engine does not start, you may need to bleed air from the injectors.

Overview of the Diagnostic Light

The diagnostic light (1) indicates if the electronic controller senses an electronic fault. When the electronic controller is functioning correctly and you move the key switch to the ON position, the diagnostic light turns on for 3 seconds and turns off to indicate that the light is working properly.

If the engine shuts off, the diagnostic light turns on steady until the you change the key position. The light blinks if the controller detects a fault in the electrical system. After you repair the fault, the light resets when you turn the key switch to the OFF position.



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Operating Tips

Becoming Familiar with the Machine

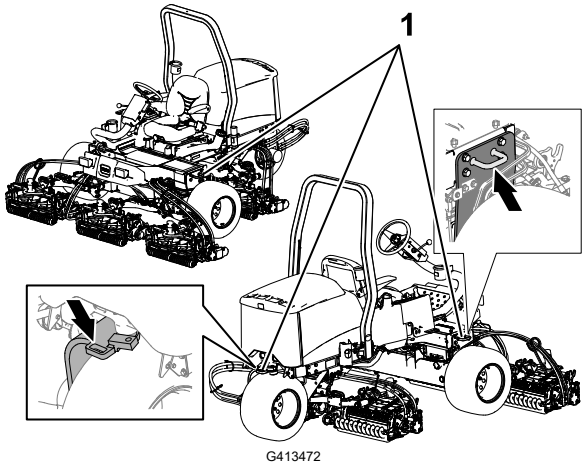
- Before mowing grass, practice operating the machine in an open area.
- Start and shut off the engine.
- Operate in forward and reverse.
- Lower and raise the cutting units and engage and disengage the cutting units.
- When you become more familiar with the machine, practice operating up and down slopes at different speeds.

Overview of the Warning System

If a warning light comes on during operation, stop the machine immediately and correct the problem before continuing operation. Serious damage could occur if you operate the machine with a malfunction.

After Operation

Tie-Down Point Locations



1 Tie-down loops

Hauling the Machine

Follow the tips below when hauling the machine.

- Use full-width ramps for loading the machine onto a trailer or truck.
- Tie the machine down securely.

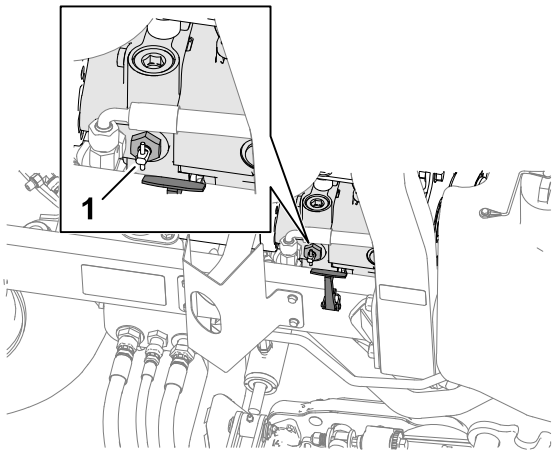
Towing the Machine

In case of an emergency, you can tow the machine for a short distance; however, Toro does not recommend this as a standard procedure.

IMPORTANT

Do not tow the machine faster than 3 to 4 km/h (2 to 3 mph) because it may damage the drive system. If you must move the machine a considerable distance, transport it on a truck or trailer.

1. Open the hood.
2. Near the right hood latch, rotate the handle-bypass valve ① on the pump 90° (1/4 turn).
3. Close and latch the hood.
4. Connect the tow vehicle to the machine at the tie-down points.
5. Sit in the operator's seat, and if needed, use the parking brake to control your machine while being towed.



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IMPORTANT

Do not start the engine while the bypass valve is open.

6. Before starting the engine, close the bypass valve by rotating it 90° (1/4 turn).

Note: Determine the left and right sides of the machine from the normal operating position.

Note: Download a free copy of the electrical or hydraulic schematic by visiting www.Toro.com and searching for your machine from the Manuals link on the home page.

IMPORTANT

Refer to your engine owner's manual and cutting unit *Operator's Manual* for additional maintenance procedures.

Recommended Maintenance Schedule

Maintenance Service Interval	Maintenance Procedure	Part No.	Qty	Description
After the first hour	Torque the wheel nuts to 103 to 127 N·m (76 to 94 ft-lb).	-	-	-
	Torque the left and right front-axle hub nuts to 339 to 373 N·m (250 to 275 ft-lb).	-	-	-
	Torque the rear-axle hub nuts to 339 to 373 N·m (250 to 275 ft-lb).	-	-	-
After the first 10 hours	Torque the wheel nuts to 103 to 127 N·m (76 to 94 ft-lb).	-	-	-
	Torque the left and right front-axle hub nuts to 339 to 373 N·m (250 to 275 ft-lb).	-	-	-
	Torque the rear-axle hub nuts to 339 to 373 N·m (250 to 275 ft-lb).	-	-	-
	Check the condition and tension of all belts.	104-3494	1	Alternator/fan belt
		99-3619	1	Hydrostat drive belt
After the first 50 hours	Change the engine oil and the engine-oil filter.	108-3841	1	Engine-oil filter
		121-6395	1	15W-40 Premium Engine Oil (5 gallons)

Maintenance Service Interval	Maintenance Procedure	Part No.	Qty	Description
		121-6394	1	15W-40 Premium Engine Oil (55 gallons)
Before each use or daily	Inspect the seat belt(s) for wear, cuts, and other damage. Replace the seat belt(s) if any component does not operate properly.	-	-	-
	Check the interlock switches.	-	-	-
	Check the parking brake.	-	-	-
	Check the engine-oil level.	121-6395	1	15W-40 Premium Engine Oil (5 gallons)
		121-6394	1	15W-40 Premium Engine Oil (55 gallons)
	Drain the water separator.	-	-	-
	Check the tire pressure.	-	-	-
	Check the engine-coolant level.	-	-	-
	Clean the engine cooling system.	-	-	-
	Check the hydraulic lines and hoses.	-	-	-
	Check the hydraulic-fluid level.	133-8086	1	PX Extended Life Hydraulic Fluid (5 gallons)
		133-8087	1	PX Extended Life Hydraulic Fluid (55 gallons)
	Check the reel-to-bedknife contact.	-	-	-
Every 25 hours	Check the electrolyte level (if machine is in storage, check every 30 days).	-	-	-
Every 50 hours	Lubricate all bearings and bushings (lubricate all bearings and bushings daily when conditions are dusty and dirty).	108-1190	1	Premium all-purpose grease (14 oz)
Every 100 hours	Check the condition and tension of all belts.	104-3494	1	Alternator/fan belt
		99-3619	1	Hydrostat drive belt

Maintenance Service Interval	Maintenance Procedure	Part No.	Qty	Description
Every 150 hours	Change the engine oil and the engine-oil filter.	108-3841	1	Engine-oil filter
		121-6395	1	15W-40 Premium Engine Oil (5 gallons)
		121-6394	1	15W-40 Premium Engine Oil (55 gallons)
Every 200 hours	Service the air cleaner (more frequently in extreme dusty or dirty conditions).	108-3811	1	Air-cleaner filter
	Torque the wheel nuts to 103 to 127 N·m (76 to 94 ft-lb).	-	-	-
	Torque the left and right front-axle hub nuts to 339 to 373 N·m (250 to 275 ft-lb).	-	-	-
	Torque the rear-axle hub nuts to 339 to 373 N·m (250 to 275 ft-lb).	-	-	-
	Check the parking brake.	-	-	-
Every 400 hours	Check the fuel lines and connections.	-	-	-
	Replace the fuel filter canister.	110-9049	1	Fuel filter
	Service the parking brakes.	-	-	-
Every 800 hours	Change the hydraulic fluid (if you are not using the recommended hydraulic fluid or have ever filled the reservoir with an alternative fluid).	133-8086	1	PX Extended Life Hydraulic Fluid (5 gallons)
		133-8087	1	PX Extended Life Hydraulic Fluid (55 gallons)
	Replace the hydraulic filter (if you are not using the recommended hydraulic fluid or have ever filled the reservoir with an alternative fluid).	86-3010	1	Hydraulic filter
Every 1,000 hours	Replace the hydraulic filter (if you are using the recommended hydraulic fluid).	86-3010	1	Hydraulic filter

Maintenance Service Interval	Maintenance Procedure	Part No.	Qty	Description
Every 2,000 hours	Change the hydraulic fluid (if you are using the recommended hydraulic fluid).	133-8086	1	PX Extended Life Hydraulic Fluid (5 gallons)
		133-8087	1	PX Extended Life Hydraulic Fluid (55 gallons)
Every 2 years	Drain and clean the fuel tank.	-	-	-
	Drain and flush the coolant system (take the machine to an Authorized Service Dealer or Distributor or refer to the *Service Manual*).	-	-	-

Daily Maintenance Checklist

Maintenance Check Item	For the week of:						
	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.	Sun.
Check the safety interlock operation.							
Check the brake operation.							
Check the levels of the engine oil and fuel.							
Check the cooling-system fluid level.							
Drain the water/fuel separator.							
Check the air filter, dust cup, and burp valve.							
Check for unusual engine noises.[1]							
Check the radiator for debris.							
Check for unusual operating noises.							
Check the fluid level of the hydraulic system.							
Check the hydraulic hoses for damage.							
Check for fluid leaks.							
Check the tire pressure.							
Check the instrument operation.							
Check the height-of-cut adjustment.							
Lubricate all grease fittings.[2]							
Touch-up damaged paint.							
Wash the machine.							

1. Check the glow plug and injector nozzles if the engine starts hard, produces excess smoke, or runs rough.
2. Immediately after every washing, regardless of the interval listed

IMPORTANT

Refer to your engine operator's manual for additional maintenance procedures.

Notation for Areas of Concern

Inspection performed by:		
Item	**Date**	**Information**
1		
2		
3		

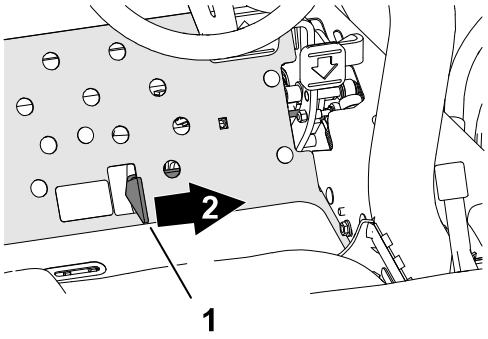
Notation for Areas of Concern (continued)

Inspection performed by:		
Item	**Date**	**Information**
4		
5		

Pre-Maintenance Procedures

Preparing for Maintenance

1. Park the machine on a level surface, engage the parking brake, and disengage the cutting-unit-drive switch.
2. Move the mow/transport slide ① right, to the Mow ② position.
3. Move the lower mow/raise control lever forward.
4. Shut off the engine, remove the key, wait for all moving parts to stop, and allow the engine to cool.



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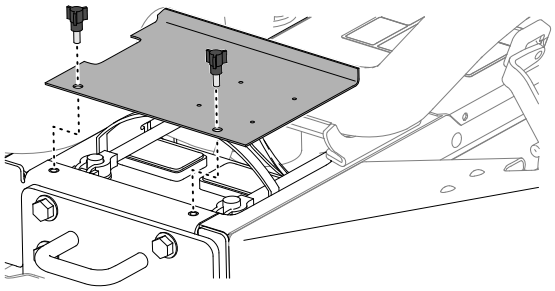
Removing the Battery Cover

Remove the battery cover as shown.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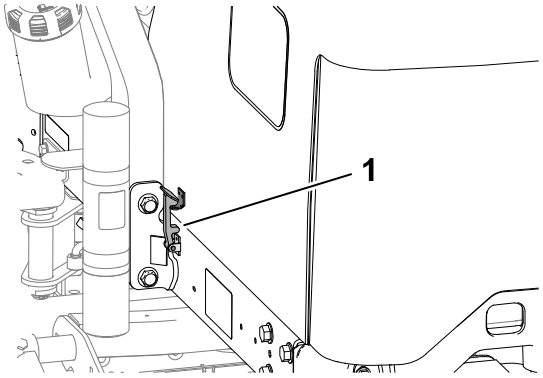
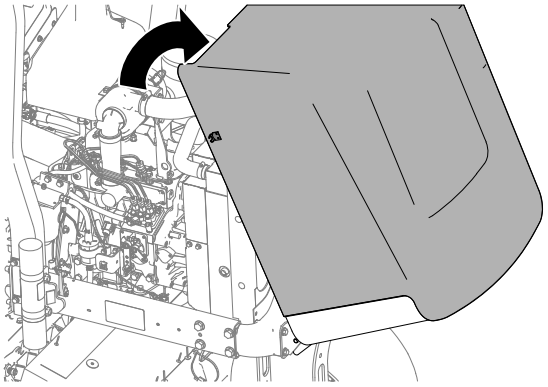
Opening the Hood

1. Release the latches (1) on both sides of the hood.



G414711

2. Rotate the hood open.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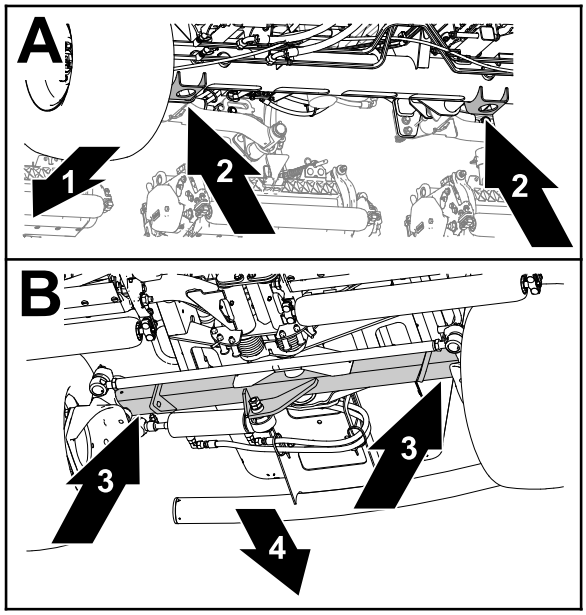
Jacking Point Locations

Note: Support the machine with jack stands whenever you work under the machine.

Use the following as machine-lift points:

- Front—the jack brackets of the front-axle tube.
- Rear—the rear-axle tube.



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(1) Front of the machine
(2) Jack brackets (front-axle tube)
(3) Rear-axle tube
(4) Back of the machine

Lubrication

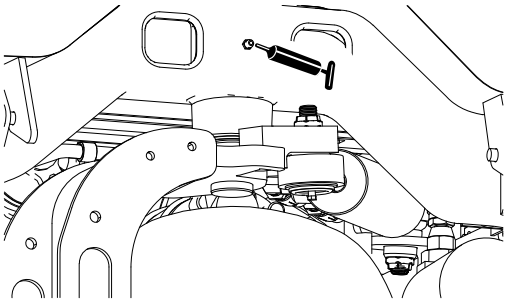
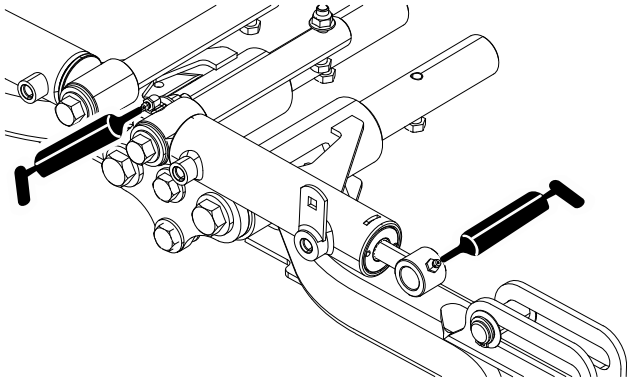
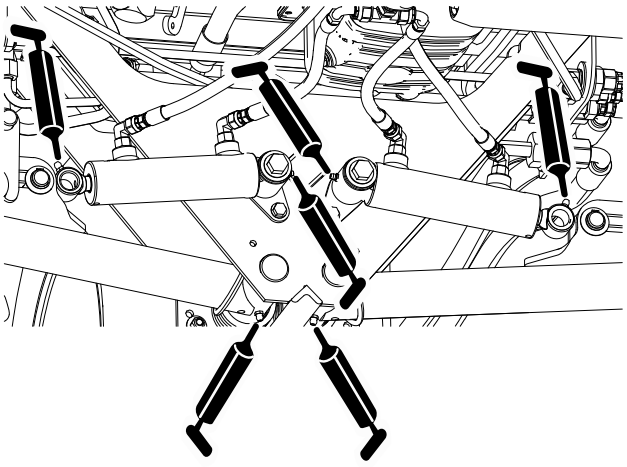
Greasing the Bearings and Bushings

The machine has grease fittings that must be lubricated regularly. Dusty and dirty operating conditions could cause dirt to get into the bearings and bushings, resulting in accelerated wear. Lubricate the grease fittings immediately after every washing, regardless of the interval specified.

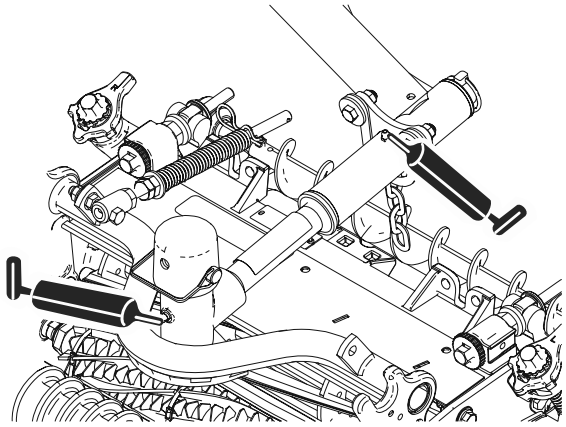
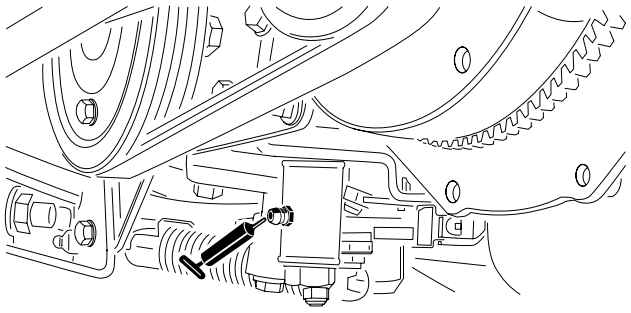
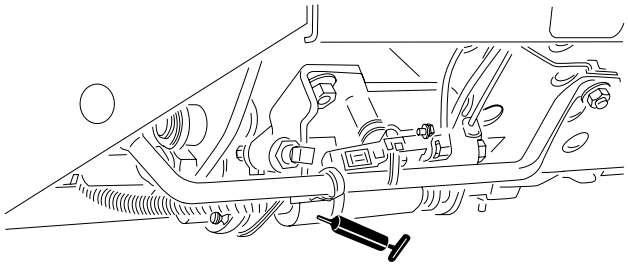
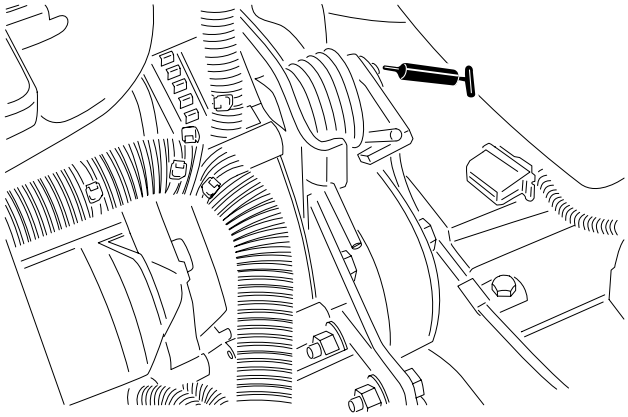
1. Prepare the machine for maintenance.
2. Grease all machine fittings with No. 2 lithium grease.

Grease Fitting Locations

Grease Specification: No. 2 lithium grease

Steering pivot	 G450437
Front lift-arm pivots and lift cylinders (3 each)	 G452351
Rear lift-arm pivots and lift cylinders (3 each side)	 G452353

Greasing the Bearings and Bushings (continued)

Cutting unit pivots (2 each)	 G452354
Neutral adjust mechanism	 G450441
Mow/transport slide	 G450442
Belt tension pivot	 G450443

Engine Maintenance

Engine Oil Specifications

Oil Type

Use high-quality, low-ash engine oil that meets or exceeds API service category CH-4 or higher.

Use the following engine oil viscosity grade:

- Preferred oil: SAE 15W-40 [-17°C (above 0°F)]
- Alternate oil: SAE 10W-30 or 5W-30 (all temperatures)

Toro Premium Engine Oil is available from your authorized Toro distributor in either 15W-40 or 10W-30 viscosity grades.

Crankcase Capacity

Approximately 3.8 L (4.0 US qt) with the filter

Checking the Engine-Oil Level

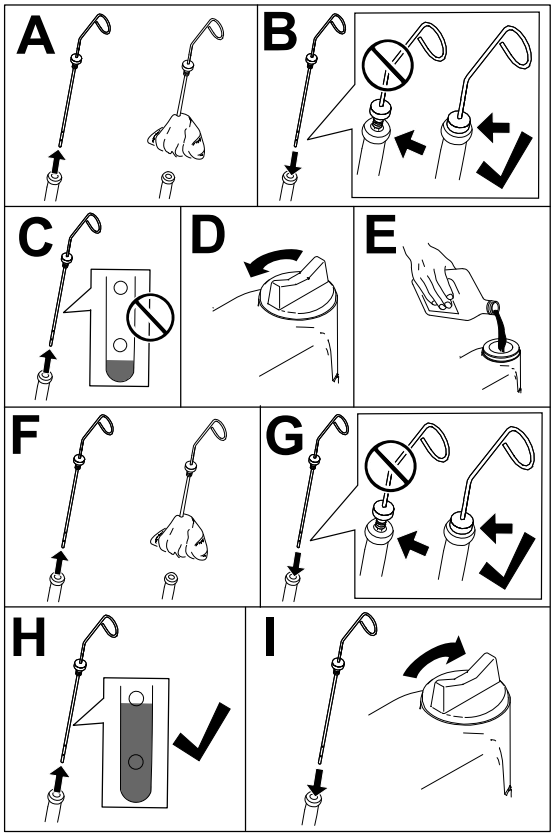
Note: Check the oil when the engine is cool. If the engine is warm, wait 10 minutes before checking.

If the oil level is below the lower limit mark on the dipstick, add oil gradually until the level reaches the upper limit mark on the dipstick.

IMPORTANT

Keep the engine-oil level between the upper and lower limits on the dipstick. Overfilling or underfilling the engine oil may cause severe engine damage.

1. Prepare the machine for maintenance.
2. Open the hood.
3. Check the level of the engine oil.
4. Close and latch the hood.



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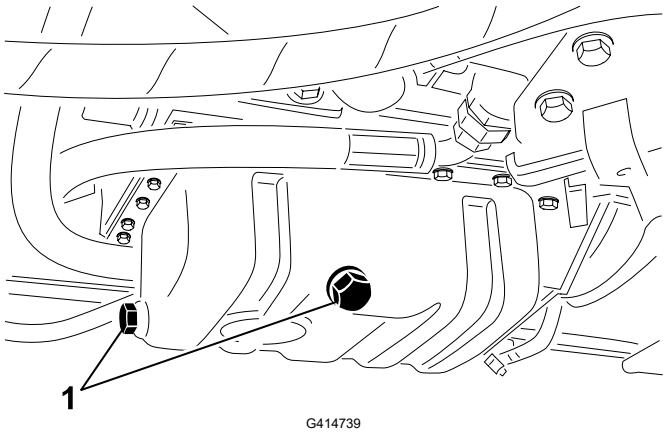
Changing the Engine Oil and Filter

1. Prepare the machine for maintenance.
2. Unlatch and open the hood.
3. Perform the following steps to change the engine oil:
   A. Remove either drain plug (1) and allow all of the existing oil to drain out of the engine.
   B. Install the drain plug.



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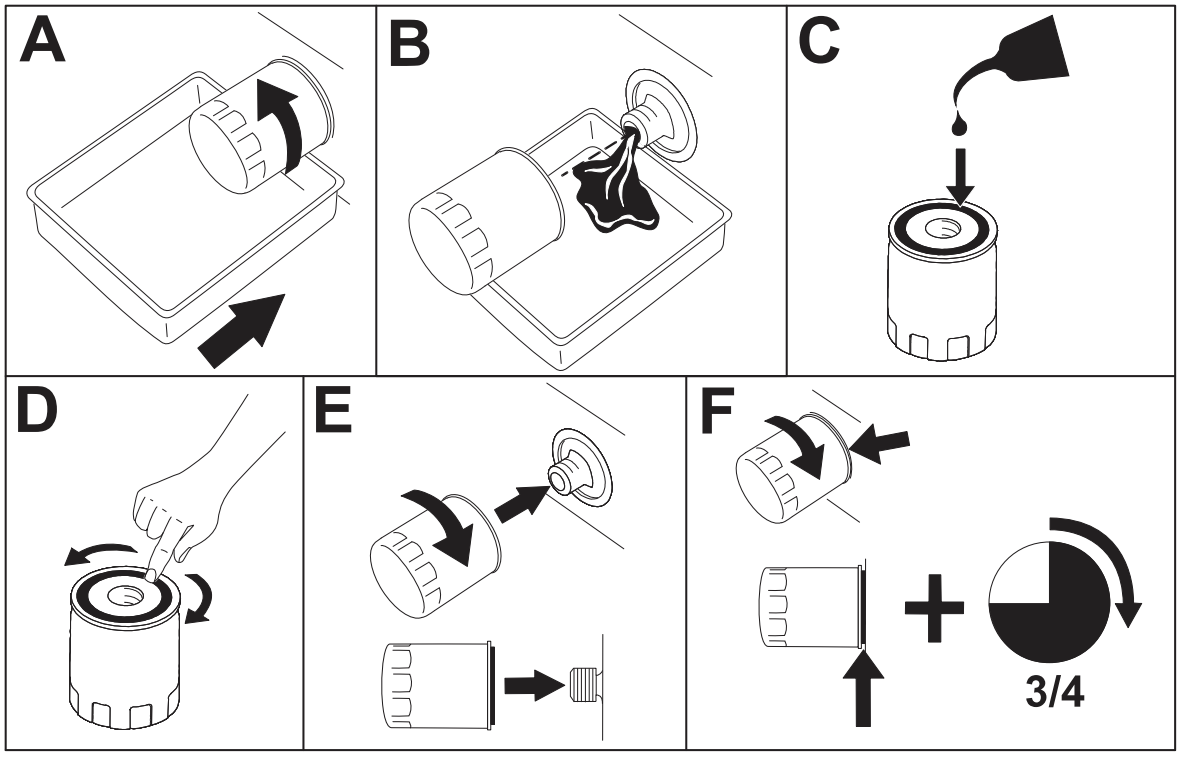
4. Change the engine-oil filter.



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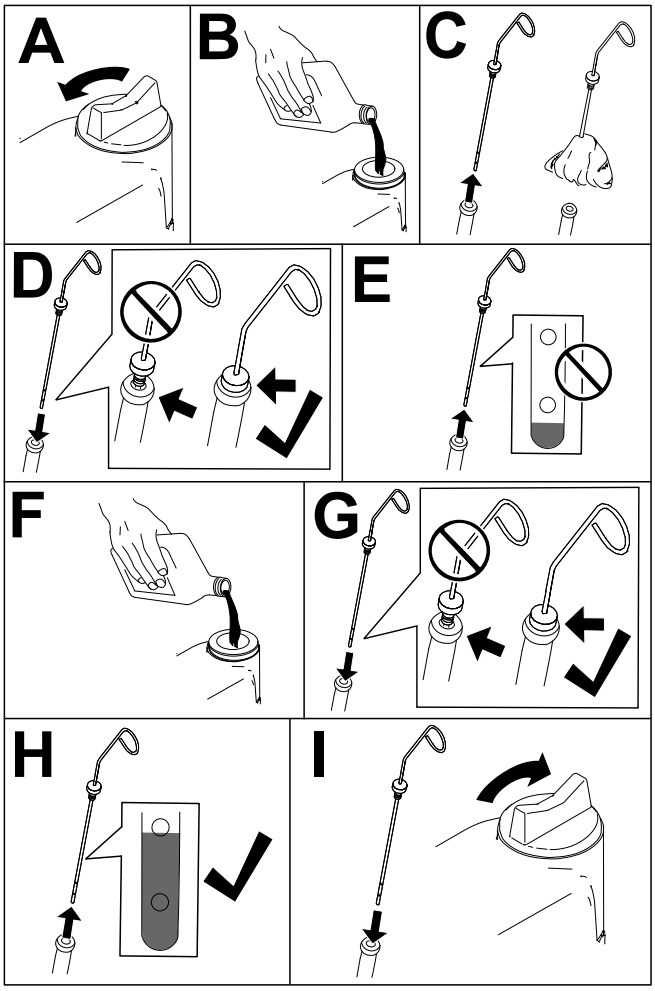
Note: Do not overtighten the filter.

5. Add oil to the crankcase.

Changing the Engine Oil and Filter (continued)



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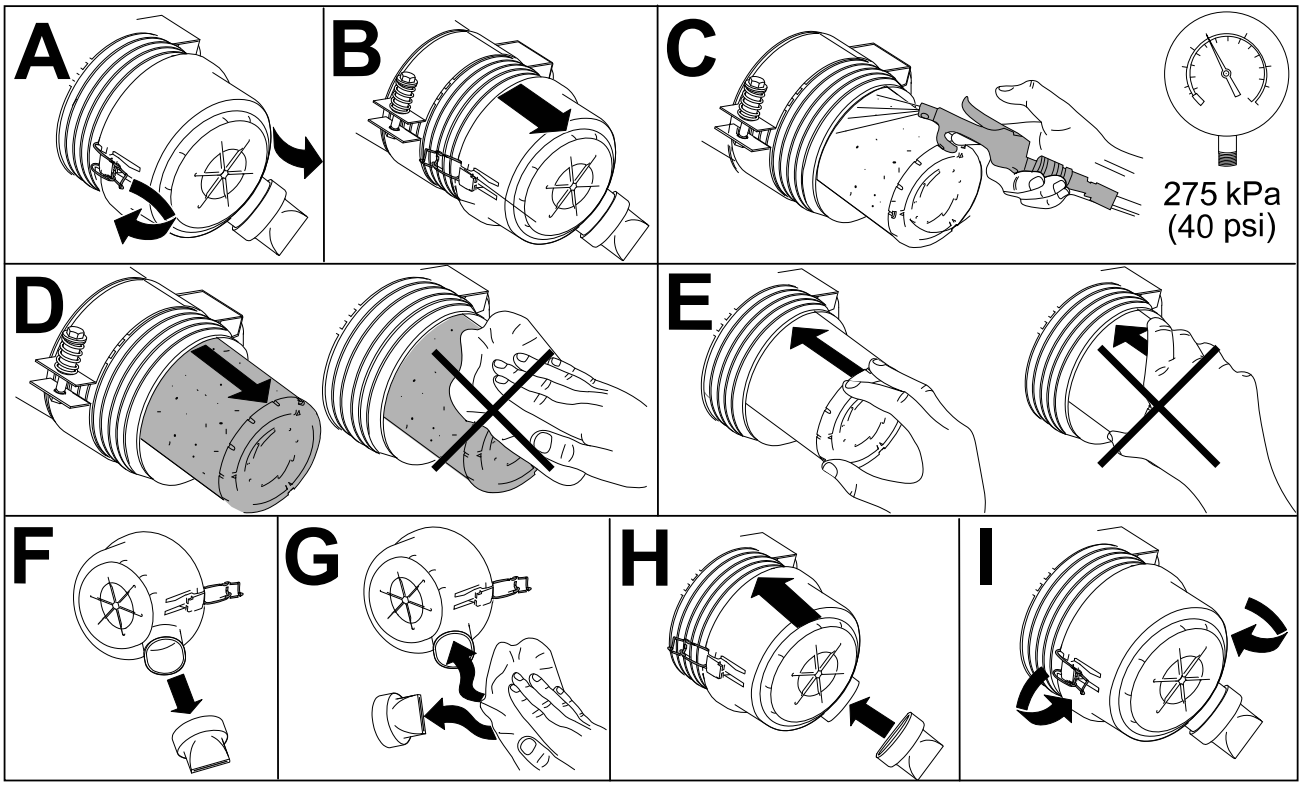
6. Close and latch the hood.

Servicing the Air Cleaner

- Check the whole intake system for leaks, damage, or loose hose clamps. Do not use a damaged air filter.
- Service the air-cleaner filter at the recommended service interval or earlier if engine performance declines due to extremely dusty, dirty conditions. Changing the air filter before it is necessary only increases the chance of dirt entering the engine when the filter is removed.

IMPORTANT

Ensure that the cover is seated correctly, seals with the air-cleaner body, and the rubber outlet valve is in a downward position—between the 5 o'clock and 7 o'clock positions when viewed from the end.



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Fuel System Maintenance

This *Operator's Manual* contains more detailed fuel and fuel system maintenance information than the engine *Owner's Manual*, which is a general-purpose reference relating to fuel and fuel maintenance.

Ensure that you understand that the fuel system maintenance, fuel storage, and fuel quality require your attention to avoid downtime and extensive engine repairs.

The fuel system has extremely tight tolerances due to the emissions and control requirements. Diesel fuel quality and cleanliness is more important for the longevity of today's high-pressure common rail (HPCR) fuel-injection system used on diesel engines.

IMPORTANT

Water or air in the fuel system will damage your engine! Do not assume that new fuel is clean. Ensure that your fuel is from a quality supplier, store your fuel correctly, and use your fuel supply within 180 days.

IMPORTANT

If you do not follow the procedures for fuel filter replacement, fuel system maintenance, and fuel storage, the engine fuel system could fail prematurely. Perform all fuel system maintenance at the specified intervals or whenever the fuel is contaminated or its quality is poor.

Fuel Storage

Appropriate fuel storage is critical for your engine. Proper maintenance of fuel storage tanks is often overlooked and leads to the contamination of fuel delivered to the machine.

- Acquire only enough fuel that you will consume within 180 days. Do not use fuel that has been stored for more than 180 days. This helps eliminate water and other contaminates in the fuel.
- If you do not remove the water from the storage tank or machine fuel tank, it can lead to rust or contamination in the storage tank and fuel system components. Tank sludge developed by mold, bacteria, or fungus restricts flow and clogs the filter and fuel injectors.
- Inspect your fuel storage tank and machine fuel tank regularly to monitor the fuel quality in the tank.
- Ensure that your fuel comes from a quality supplier.
- If you find water or contaminants in your storage tank or machine fuel tank, work with your fuel provider to correct the problem and perform all fuel system maintenance.
- Do not store diesel fuel in tanks or canisters made with zinc-plated components.

Servicing the Fuel Tank

1. Prepare the machine for maintenance.
2. Drain and clean the tank if the fuel system becomes contaminated or if the machine will be stored for an extended period. Use clean fuel to flush out the tank.

Inspecting the Fuel Lines and Connections

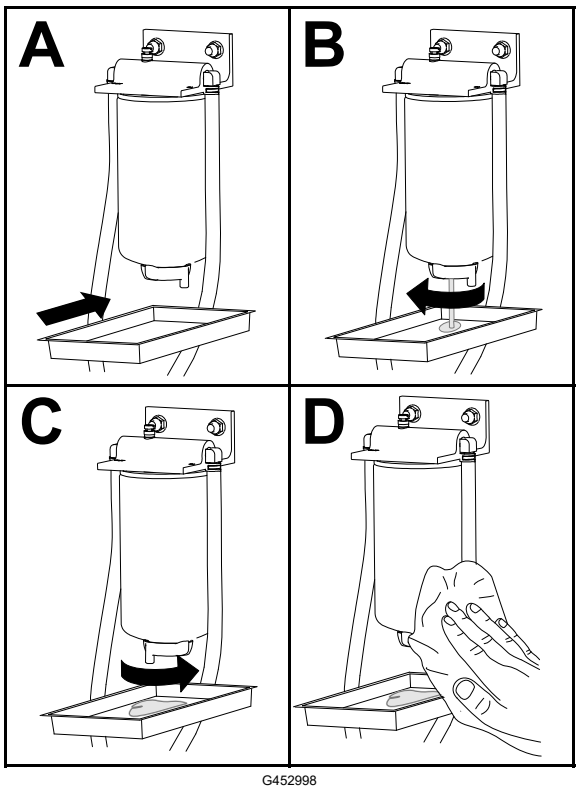
1. Prepare the machine for maintenance.
2. Unlatch and open the hood.
3. Inspect the fuel lines and fittings for deterioration, damage, or loose connections.

   Note: Repair or replace any damaged or worn the fuel lines or fittings.
4. Close and latch the hood.

Servicing the Fuel/Water Separator

Draining the Fuel/Water Separator

1. Prepare the machine for maintenance.
2. Drain the water separator as shown.



G452998

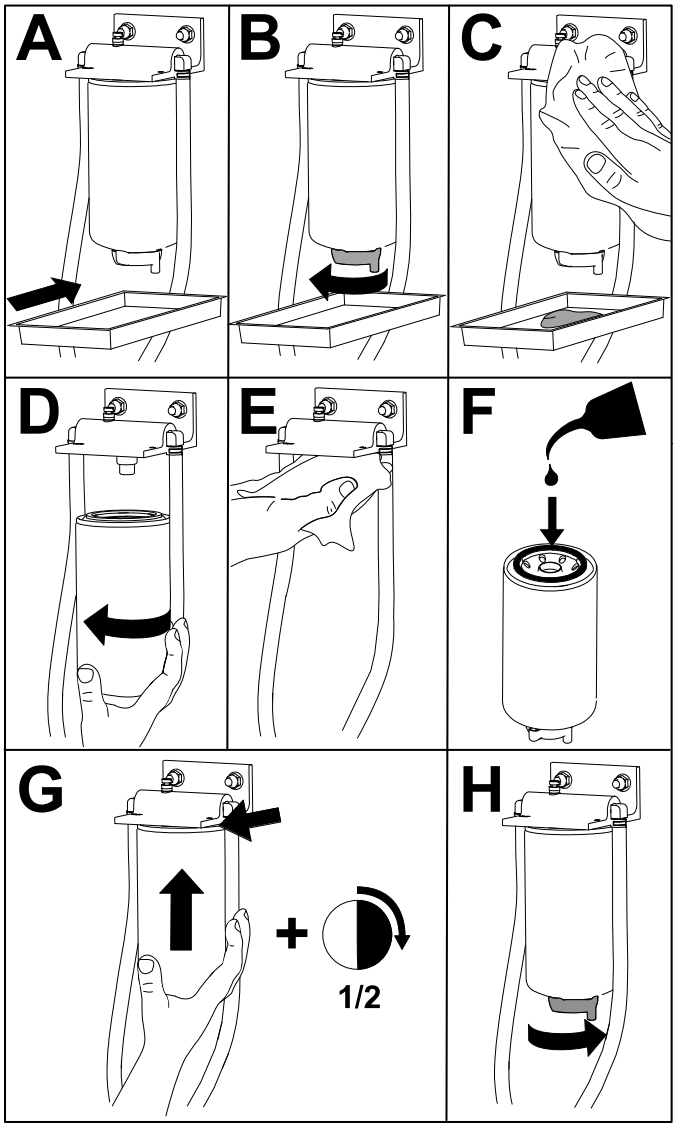
3. Start the engine, check for leaks, and shut off the engine.

   Note: Repair all fuel leaks.

Servicing the Fuel/Water Separator (continued)

Replacing the Fuel/Water Separator Filter

1. Replace the filter as shown.



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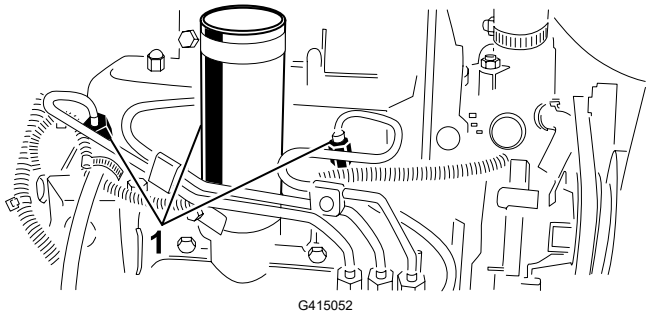
2. Start the engine, check for leaks, and shut off the engine.

   Note: Repair all fuel leaks.

Bleeding Air from the Injectors

Note: Use this procedure only if the fuel system has been purged of air through normal priming procedures and the engine does not start.

1. Prepare the machine for maintenance.
2. Unlatch and open the hood, and allow the engine to cool.
3. Loosen the tube nut for the fuel line to the No. 1 fuel-injector nozzle.



(1) Fuel injectors

4. Move the throttle to the FAST position.
5. Turn the key to the START position and watch the fuel flow around the connector. Turn the key to the OFF position when there is a continuous flow.

IMPORTANT

To prevent overheating of the starter motor, do not engage the starter for longer than 15 seconds. After 10 seconds of continuous cranking, wait 60 seconds before engaging the starter motor again.

6. Tighten the tube nut securely.
7. Clean any fuel from the engine.
8. Repeat steps 3 through 7 for the remaining fuel-injector nozzles.
9. Start the engine, check for leaks, and shut off the engine.

   Note: Repair all fuel leaks.
10. Close and latch the hood.

Electrical System Maintenance

Servicing the Battery

DANGER

Battery electrolyte contains sulfuric acid, which is lethal if consumed and causes severe burns.

- **Do not drink electrolyte and avoid contact with skin, eyes, or clothing.**
- **Wear safety glasses and rubber gloves.**
- **Fill the battery where clean water is always available for flushing the skin.**

WARNING

Incorrectly routing the battery cable could damage the machine and cables, causing sparks. Sparks can cause the battery gasses to explode, which could result in death or serious injury.

- **Always disconnect the negative (black) battery cable before disconnecting the positive (red) cable.**
- **Always connect the positive (red) battery cable before connecting the negative (black) cable.**

1. Prepare the machine for maintenance.
2. Remove the battery cover.
3. Remove the filler caps of the battery.
4. Maintain the battery electrolyte level in the battery cells with distilled or demineralized water.

   Note: Do not fill the cells above the bottom of the split ring inside each cell.
5. Install the filler caps with the vents pointing to the rear (toward the fuel tank).
6. Clean the top of the battery by washing it periodically with a brush dipped in ammonia or bicarbonate of soda solution. Flush the top surface with water after cleaning.

IMPORTANT

Do not remove the filler caps while cleaning.

7. Check the battery cable clamps and battery posts for corrosion. If corrosion occurs, perform the following:

   A. Disconnect the negative (–) battery cable.

Servicing the Battery (continued)

B. Disconnect the positive (+) battery cable.
C. Clean the clamps and posts separately.
D. Connect the positive (+) battery cable.
E. Connect the negative (–) battery cable.
F. Coat the clamps and terminals with battery terminal protector.

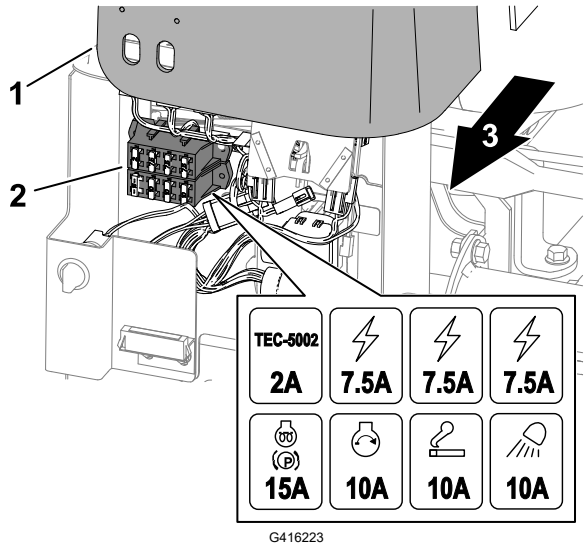
8. Check that the battery cable clamps are tight on the battery posts.
9. Install the battery cover.

Note: Store the machine where the temperature is cooler rather than warmer to prevent the battery from discharging more rapidly.

Servicing the Fuses

Servicing the Fuse Block

1. Lift the control-arm cover.



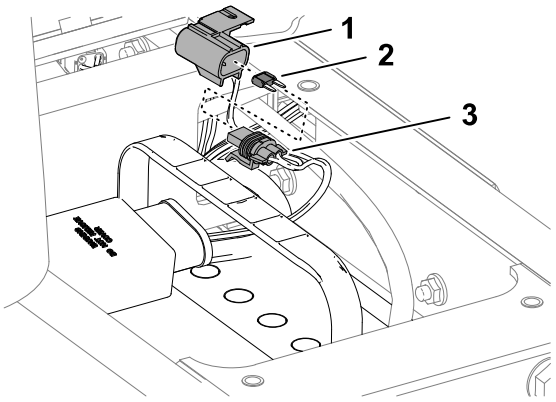
(1) Control-arm cover
(2) Fuse block
(3) Right side of the machine

2. Locate the open fuse in the fuse holder or fuse block.
3. Replace the fuse with the same type and amperage fuse.
4. Assemble the cover onto the control arm.

Servicing the Fuses (continued)

Servicing the Telematics Fuse

1. Remove the battery cover.
2. Remove the cap (1) from the in-line fuse holder (3).
3. Replace the fuse (10 A) (2).
4. Assemble the cap onto the in-line fuse holder.
5. Install the battery cover.



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Drive System Maintenance

Checking the Tire Pressure

WARNING

Low tire pressure decreases machine side hill stability. This could cause a rollover, which could result in death or serious injury.

Do not under-inflate the tires.

Note: Maintain the recommended pressure in all tires to ensure a good quality of cut and proper machine performance.

1. Measure the air pressure in each tire. The correct air pressure in the tires is 83 kPa (12 psi).
2. If needed, add air to of remove air from the tires until you measure 83 kPa (12 psi).

Torquing the Wheel Lug Nuts

Torque the wheel lug nuts to **103 to 127 N·m (76 to 94 ft-lb)** in a crossing pattern.

WARNING

Failing to maintain proper torque of the wheel nuts could result in death or serious injury.

Maintain proper torque of the wheel nuts.

Torquing the Axle Hub Nuts

Torque the axle hub nuts to **339 to 373 N·m (250 to 275 ft-lb)**.

Adjusting the Traction Drive for Neutral

If the machine moves when the traction pedal is in the neutral position, adjust the traction cam.

1. Prepare the machine for maintenance.
2. Raise a front wheel and a rear wheel off the ground and place support blocks under the frame.

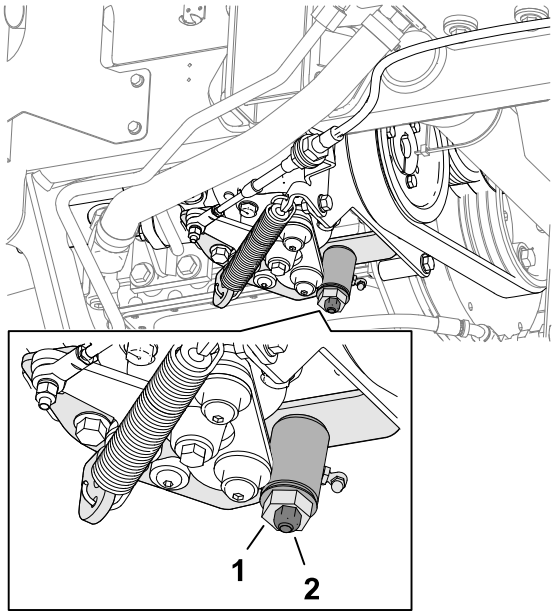
WARNING

If the machine is not supported adequately, it may accidentally fall, which could result in death or serious injury.

Raise a front wheel and the rear wheel off the ground to prevent the machine from moving during the adjustment.

Adjusting the Traction Drive for Neutral (continued)

3. Loosen the locknut ② on the traction adjustment cam ①.



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WARNING

The engine must be running to make a final adjustment of the traction adjustment cam. Contact with hot or moving parts could result in death or serious injury.

Keep your hands, feet, face, and other body parts away from the muffler, other hot parts of the engine, and rotating parts.

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4. Start the engine and rotate the cam hex in both directions to determine the mid position of the neutral span.
5. Tighten the locknut securing the adjustment.
6. Shut off the engine.
7. Remove the support blocks and lower the machine to the ground. Test drive the machine to ensure that it does not move when the traction pedal is in neutral.

Cooling System Maintenance

Coolant Specifications

The coolant reservoir is filled at the factory with a 50/50 solution of water and ethylene glycol base extended-life coolant.

IMPORTANT

Use only commercially available coolants that meet the specifications listed in the Extended Life Coolant Standards Table.

Do not use conventional (green) inorganic-acid technology (IAT) coolant in your machine. Do not mix conventional coolant with extended-life coolant.

Coolant Type Table

Ethylene-Glycol Coolant Type	Corrosion Inhibitor Type
Extended-life antifreeze	Organic-acid technology (OAT)

IMPORTANT

Do not rely on the color of the coolant to identify the difference between conventional (green) inorganic-acid technology (IAT) coolant and extended-life coolant.

Coolant manufacturers may dye extended-life coolant in one of the following colors: red, pink, orange, yellow, blue, teal, violet, and green. Use coolant that meets the specifications in the Extended Life Coolant Standards Table.

Extended Life Coolant Standards

ATSM International	SAE International
D3306 and D4985	J1034, J814, and 1941

IMPORTANT

Coolant concentration should be a 50/50 mixture of coolant to water.

- **Preferred:** When mixing coolant from a concentrate, mix it with distilled water.
- **Preferred option:** If distilled water is not available, use a pre-mix coolant instead of a concentrate.
- **Minimum requirement:** If distilled water and pre-mix coolant are not available, mix concentrated coolant with clean drinkable water.

Coolant Specifications (continued)

Cooling system capacity

Approximately 5.7 L (6 US qt)

Checking the Coolant Level

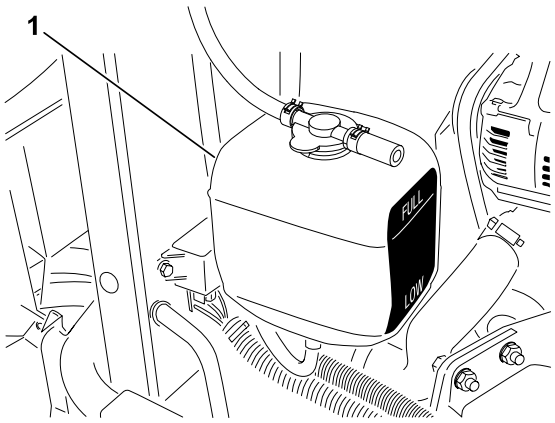
⚠ CAUTION ⚠

If the engine has been running, the pressurized, hot coolant can escape, which could result in minor or moderate injury.

- **Do not open the radiator cap when the engine is running.**
- **Use a rag when opening the radiator cap, and open the cap slowly to allow steam to escape.**

1. Prepare the machine for maintenance.
2. Unlatch and open the hood.
3. Check the coolant level in the expansion tank (1).

   Note: With a cold engine, the coolant level should be approximately midway between the marks on the side of the tank.
4. If the coolant level is low remove the expansion tank cap, add the specified coolant to the tank until the coolant level is midway between the marks on the side of the tank, and assemble the cap to the tank.



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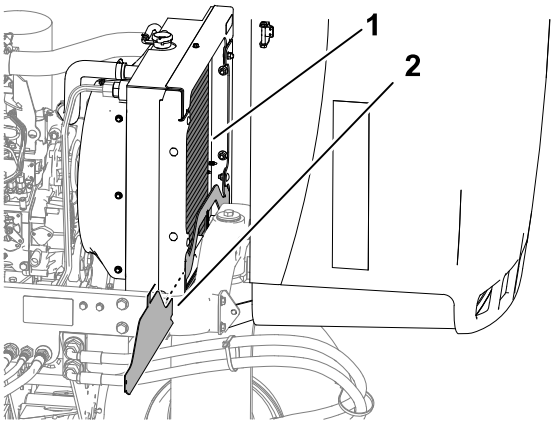
IMPORTANT

Do not overfill the expansion tank.

5. Close and latch the hood.

Cleaning the Engine Cooling System

1. Prepare the machine for maintenance.
2. Unlatch and open the hood.
3. Clean the engine area thoroughly of all debris.
4. Remove the lower radiator shield (2).
5. Clean both sides of the radiator (1) area thoroughly with water or compressed air.
6. Install the lower radiator shield.
7. Close and latch the hood.



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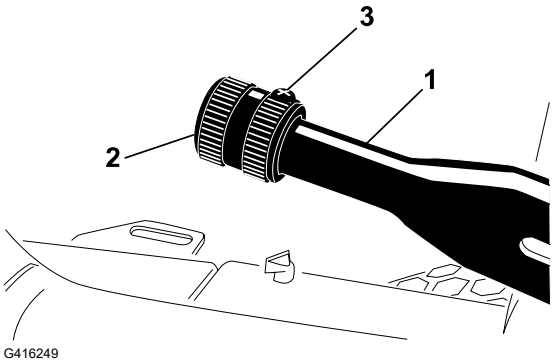
Brake Maintenance

Adjusting the Parking Brake

1. Prepare the machine for maintenance.
2. Loosen the setscrew [3] securing the knob [2] to the parking-brake lever [1].
3. Rotate the knob until a force of 133 to 178 N (30 to 40 lb) is required to actuate the lever.
4. Tighten the setscrew.



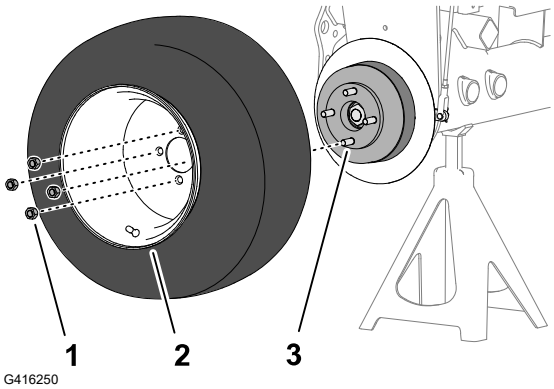
Servicing the Parking Brakes

Preparing the Machine

1. Prepare the machine for maintenance.
2. Raise the front of machine.
3. Support the machine with jack stands rated for the weight of your machine.
4. Repeat steps 2 and 3 at the other side of the machine.

Removing the Front Wheels

1. Remove the 4 lug nuts [1] that secure the front wheel [2] to the hub [3], and remove the wheel.
2. Repeat at the other side of the machine.

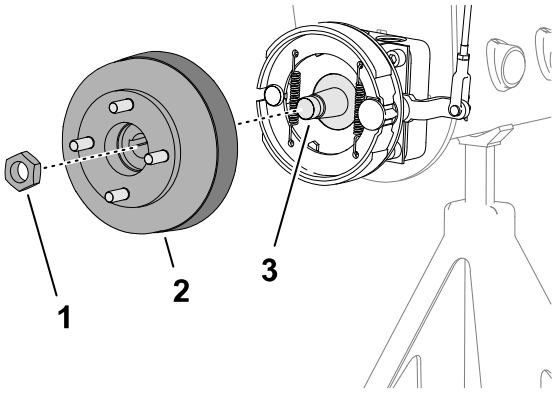


Removing the Wheel Hub and Brake Drum

Special Tools: Wheel Hub Puller—Toro Part No. TOR4097

Servicing the Parking Brakes (continued)

1. Remove the locknut ① that secures the hub to the wheel-motor shaft ③.



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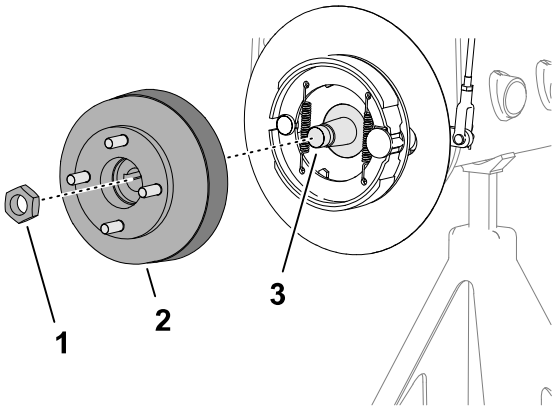
2. Repeat step 1 on the other side of the machine.
3. Release the parking brake.
4. Use the specified wheel hub puller to remove wheel hub and brake drum ② from the wheel-motor shaft.



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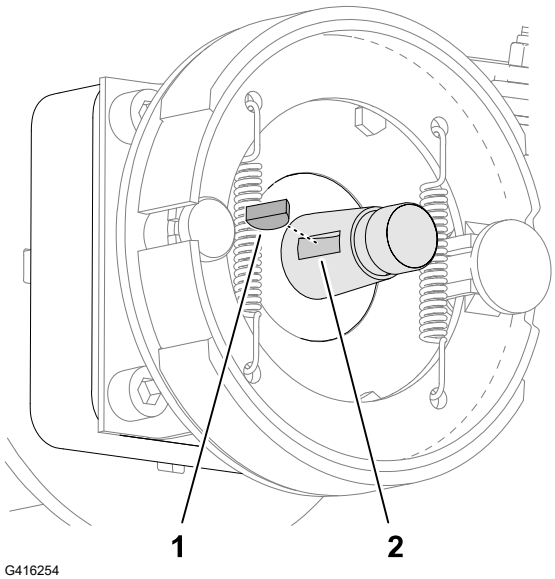
5. Remove woodruff key ① from the wheel-motor shaft ②.
6. Repeat steps 4 and 5 at the other side of the machine.



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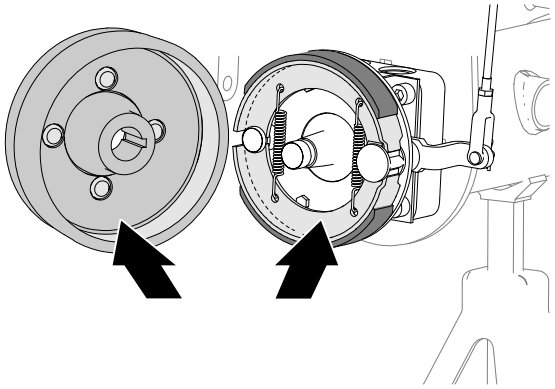
Servicing the Parking Brakes (continued)

Cleaning the Brake Drum and Shoes

At both sides of the machine, clean inside the brake drums, the brake shoes, backing plate, and when installed, clean the optional grass shield of any grass, dirt, and dust.



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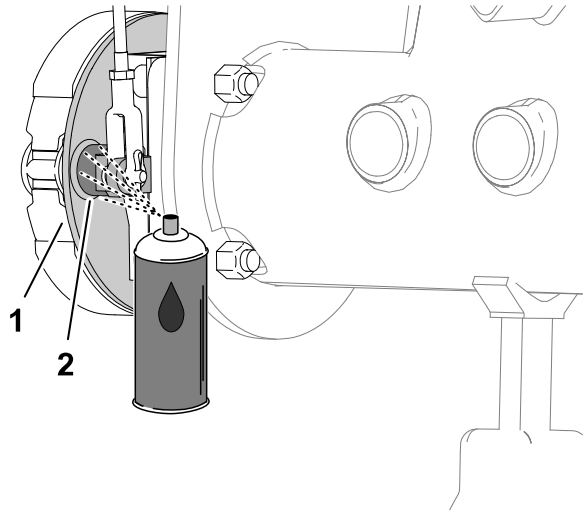
Servicing the Parking Brakes (continued)

Inspecting and Lubricating the Brake Cam Shaft

1. At the inboard side of the brake-backing plate (machines without the optional wheel-rim grass shield) or the wheel shield (machines with the optional wheel-rim grass shield), spray penetrating oil between the brake cam shaft ② and the backing plate ①.

Machine without the optional grass shield shown.



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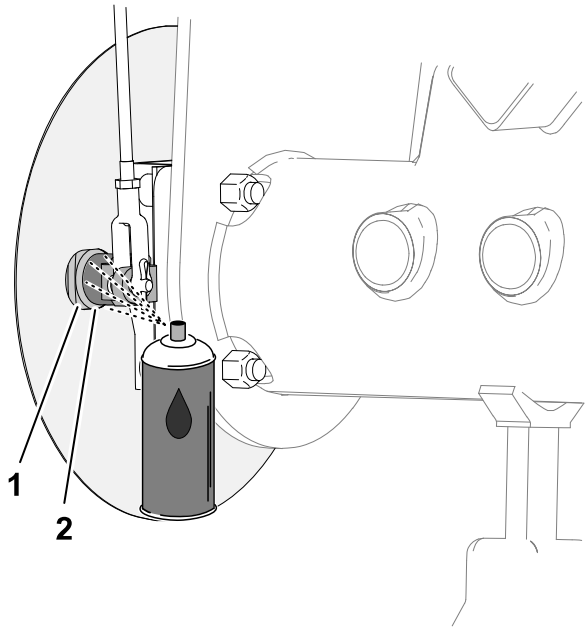
Machine with the optional grass shield shown.



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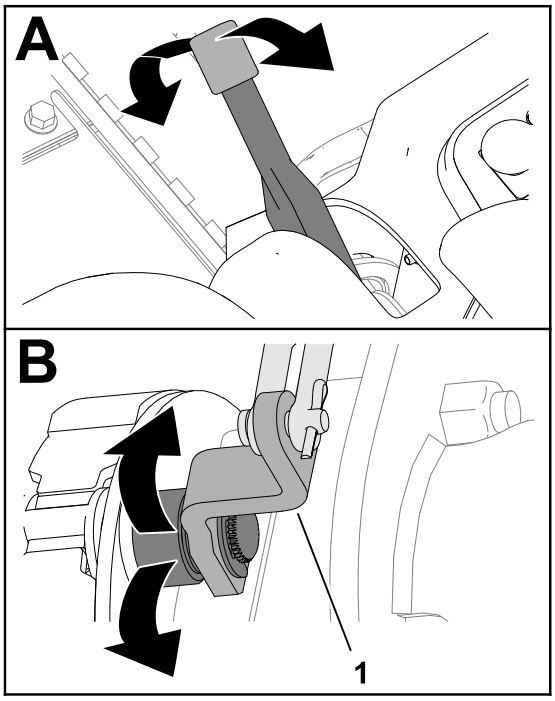
Servicing the Parking Brakes (continued)

2. Move the parking brake lever up and down to check that the lever for the brake-cam lever (1) moves freely.

   Note: If the brake cam binds, repair or replace the brake cam; refer to the *Service Manual* for your machine.

3. Repeat steps 1 and 2 at the other side of the machine.
4. Disengage the parking brake.



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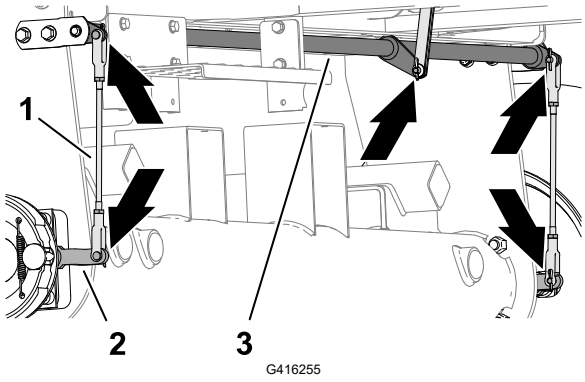
Inspecting the Brake Linkage

1. Inspect the left and right brake-rod assemblies for damage and wear.

   Note: If the brake rod parts are damaged and worn, replace them; refer to the *Service Manual* for your machine.



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(1) Brake-rod assemblies
(2) Brake-cam lever
(3) Brake pivot shaft

2. Inspect the brake pivot shaft for damage and wear.

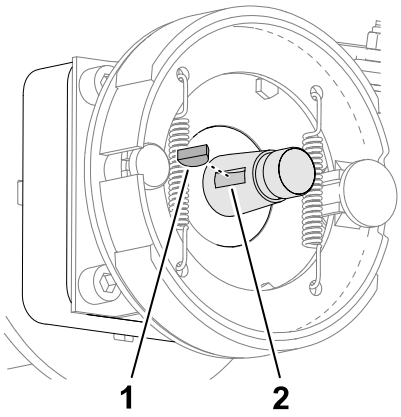
   If the pivot shaft is damaged and worn, replace them; refer to the *Service Manual* for your machine.

Installing the Wheel Hub and Brake Drum

1. Thoroughly clean the wheel hub and hydraulic motor shaft.

Servicing the Parking Brakes (continued)

2. Insert the woodruff key ① into the groove of the wheel-motor shaft ②.



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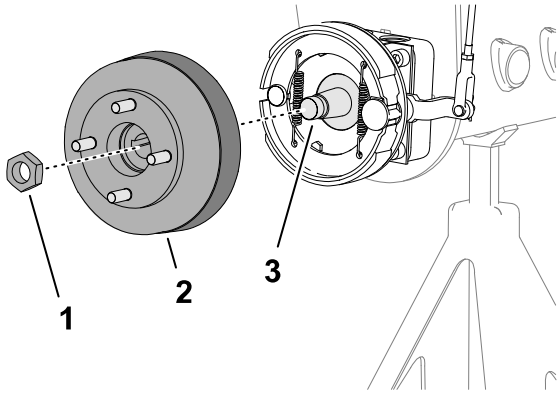
3. Assemble the wheel hub and brake drum ② onto the wheel-motor shaft ③.
4. Secure the wheel hub to the shaft with the locknut ①, and tighten by hand.

Machine without the optional grass shield shown.



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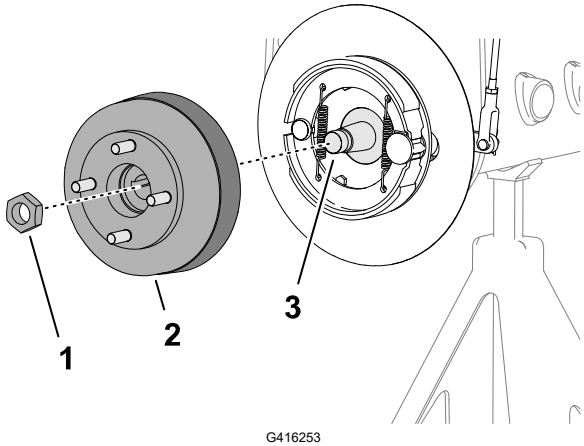
Machine with the optional grass shield shown.



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Note: The brake shoes and backing plate must concentrically align with the brake drum. If the shoes, plate, and drum are misaligned, refer to the *Service Manual* for your machine.

5. Repeat this procedure at the other side of the machine.

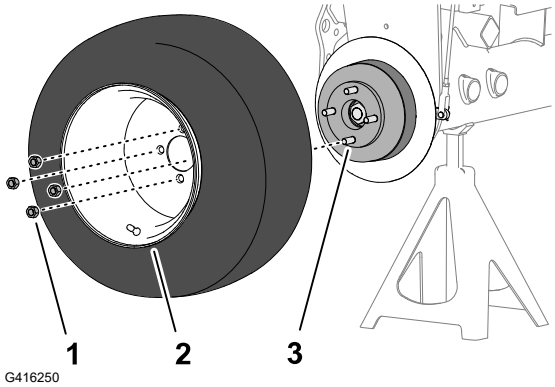
Servicing the Parking Brakes (continued)

Installing the Wheel

1. Assemble the wheel (2) to the hub (3) with the 4 lug nuts (1), and tighten the lug nuts by hand.
2. Repeat step 1 at the other side of the machine.
3. Remove the jack stands and lower the machine.

4. Torque the wheel lug nuts to **103 to 127 N·m (76 to 94 ft-lb)** in a crossing pattern.

5. Torque the locknut to **339 to 373 N·m (250 to 275 ft-lb)**.
6. Check the parking brake and adjust it if necessary.



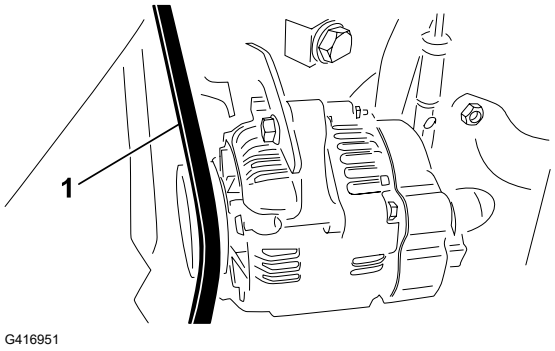
Belt Maintenance

Servicing the Engine Belts

Tensioning the Alternator/Fan Belt

1. Prepare the machine for maintenance.
2. Unlatch and open the hood.
3. Check the alternator/fan belt (1) tension by pressing the belt midway between the alternator and crankshaft pulleys.

   Note: With 98 N (22 lb) of force, the belt should deflect 11 mm (7/16 inch).
4. If the deflection is incorrect, complete the following procedure to tension the belt:
   A. Loosen the bolt securing the brace to the engine and the bolt securing the alternator to the brace.
   B. Insert a pry bar between the alternator and engine and pry the alternator outward.
   C. When you achieve proper belt tension, tighten the alternator and brace bolts to secure the adjustment.
5. Close and latch the hood.



Servicing the Engine Belts (continued)

Replacing the Hydrostat Drive Belt

1. Insert a nut driver or small piece of tubing onto the end of the belt tensioning spring.

WARNING

When you replace the hydrostat drive belt, you must release the tension on the spring, which is under a heavy load. Releasing the tension on the spring improperly could result in death or serious injury.

Be careful when releasing the tension on the spring.

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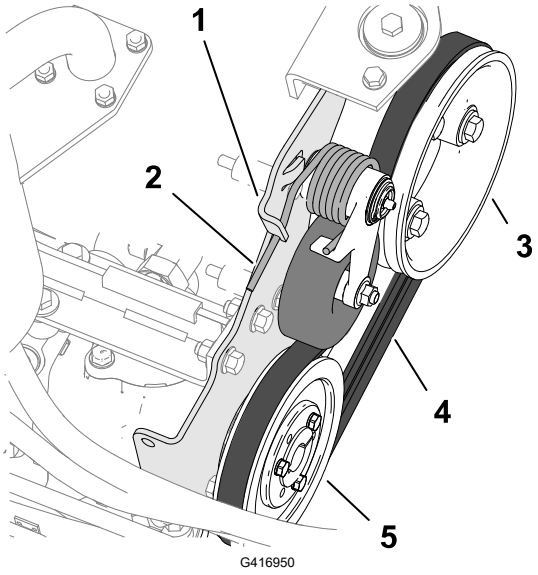
2. Push down the end of the belt-tension spring down and out of the notch in the tab of the pump mount, and move the spring end forward.



(1) Pump mount tab
(2) Belt-tension spring
(3) Engine pulley
(4) Drive belt
(5) Hydrostat pulley

3. Replace the belt.
4. Push down the end of the belt-tension spring, and inward, and align it into the notch in the pump mount tab.

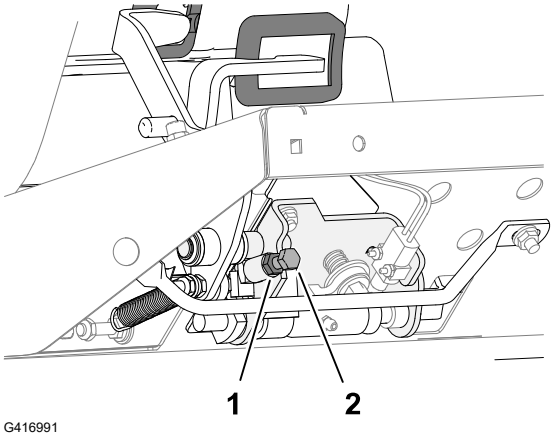
Controls Maintenance

Adjusting Mow Ground Speed

1. Prepare the machine for maintenance.
2. Loosen the jam nut ① for the speed-stop bolt ②.
3. Adjust the speed-stop bolt as follows:

   Note: The mow speed is set at the factory to 9.7 km/h (6 mph).

   - To decrease the mow speed, rotate the speed-stop bolt clockwise.
   - To increase the mow speed, rotate the speed-stop bolt counterclockwise.



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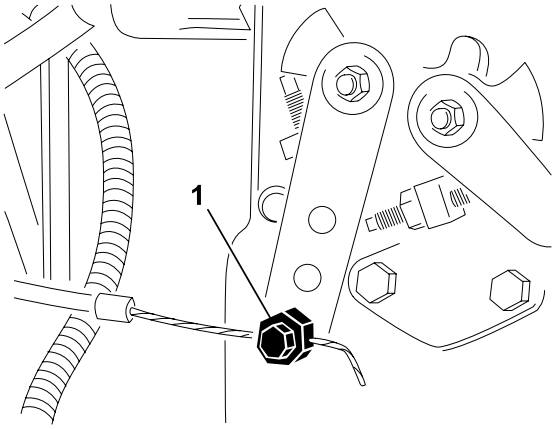
4. Hold the speed-stop bolt and tighten the jam nut.
5. Test drive the machine to confirm the maximum mow speed adjustment.

Adjusting the Throttle

1. Prepare the machine for maintenance.
2. Unlatch and open the hood.
3. Position the throttle lever rearward so that it stops against the control panel slot.
4. Loosen the throttle cable connector ① on the injection pump lever arm.
5. Hold the injection pump lever arm against the low idle stop and tighten the cable connector.
6. Loosen the bolts securing the throttle control to the control panel.
7. Push the throttle control lever all the way forward.
8. Slide the stop plate until it contacts the throttle lever and tighten the bolts securing the throttle control to the control panel.



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9. If the throttle does not stay in position during operation, torque the locknut used to set the friction device on the throttle lever to **5 to 6 N·m (44 to 53 in-lb)**.

   Note: The maximum force required to operate the throttle lever should be 89 N (20 lb).
10. Close and latch the hood.

Hydraulic System Maintenance

Hydraulic Fluid Specifications

The reservoir is filled at the factory with high-quality hydraulic fluid. Check the level of the hydraulic fluid before you first start the engine and daily thereafter.

Recommended hydraulic fluid: Toro PX Extended Life Hydraulic Fluid; available in 19 L (5 US gallon) pails or 208 L (55 US gallon) drums.

Note: A machine using the recommended replacement fluid requires less frequent fluid and filter changes.

Alternative hydraulic fluids: If Toro PX Extended Life Hydraulic Fluid is not available, you may use another conventional, petroleum-based hydraulic fluid having specifications that fall within the listed range for all the following material properties and that it meets industry standards. Do not use synthetic fluid. Consult with your lubricant distributor to identify a satisfactory product.

Note: Toro does not assume responsibility for damage caused by improper substitutions, so use products only from reputable manufacturers who will stand behind their recommendation.

High Viscosity Index/Low Pour Point Anti-wear Hydraulic Fluid, ISO VG 46

Material Properties:

Viscosity, ASTM D445	cSt @ 40°C (104°F) 44 to 48
Viscosity Index ASTM D2270	140 or higher
Pour Point, ASTM D97	-37°C to -45°C (-34°F to -49°F)
Industry Specifications:	Eaton Vickers 694 (I-286-S, M-2950-S/ 35VQ25 or M-2952-S)

Note: Many hydraulic fluids are almost colorless, making it difficult to spot leaks. A red dye additive for the hydraulic fluid is available in 20 ml (0.67 fl oz) bottles. A bottle is sufficient for 15 to 22 L (4 to 6 US gallons) of hydraulic fluid. Order Part No. 44-2500 from your authorized Toro distributor.

IMPORTANT

Toro Premium Synthetic Biodegradable Hydraulic Fluid is the only synthetic biodegradable fluid approved by Toro. This fluid is compatible with the elastomers used in Toro hydraulic systems and is suitable for a wide-range of temperature conditions. This fluid is compatible with conventional mineral oils, but for maximum biodegradability and performance, the hydraulic system should be thoroughly flushed of conventional fluid. The oil is available in 19 L (5 US gallon) pails or 208 L (55 US gallon) drums from your authorized Toro distributor.

Hydraulic Fluid Specifications (continued)

Hydraulic tank capacity

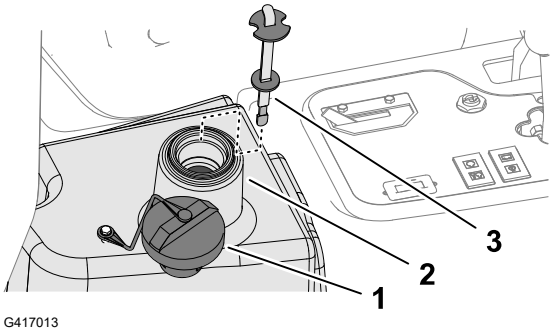
Hydraulic tank capacity: 22.7 L (6 US gallons)

Checking the Hydraulic-Fluid Level

The reservoir is filled at the factory with high-quality hydraulic fluid. The best time to check the hydraulic oil is when the fluid is cold. The machine should be in its transport configuration.

1. Prepare the machine for maintenance.
2. Clean the area around the filler neck (2) and cap (1) of the hydraulic-fluid tank and remove the cap.
3. Remove the dipstick (3) from the filler neck and wipe it with a clean rag.
4. Insert the dipstick into the filler neck; then remove it and check the fluid level.

   Note: The fluid level should be within 6 mm (1/4 inch) of the mark on the dipstick.



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5. If the level is low, add the specified fluid to raise the level to the full mark.

IMPORTANT

Do not overfill the hydraulic reservoir.

6. Install the dipstick and cap onto the filler neck.

Inspecting the Hydraulic Lines and Hoses

Inspect the hydraulic lines and hoses for leaks, kinked lines, loose mounting supports, wear, loose fittings, weather deterioration, and chemical deterioration.

Note: Make all necessary repairs before operating.

Changing the Hydraulic Fluid

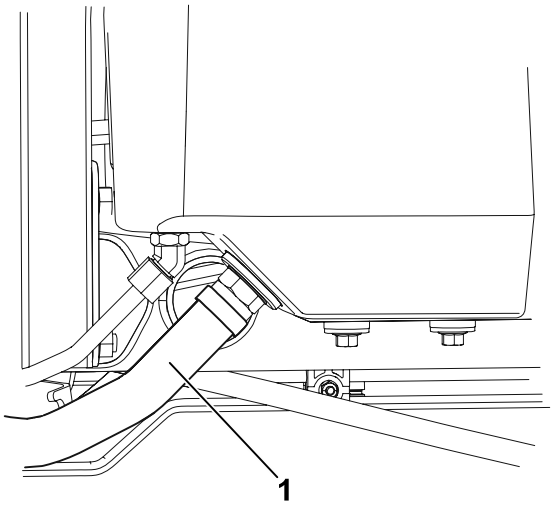
WARNING

Hot hydraulic fluid can cause severe burns, which could result in death or serious injury.

Allow the hydraulic fluid to cool before performing any maintenance to the hydraulic system.

If the fluid becomes contaminated, contact your local Toro distributor because the system must be flushed. Contaminated fluid looks milky or black when compared to clean oil.

1. Prepare the machine for maintenance.
2. Disconnect the large hydraulic hose (1) from the reservoir, and let the hydraulic fluid flow into a drain pan.
3. Install the hydraulic hose when hydraulic fluid stops draining.
4. Fill the reservoir with approximately 22.7 L (6 US gallons) of hydraulic fluid.



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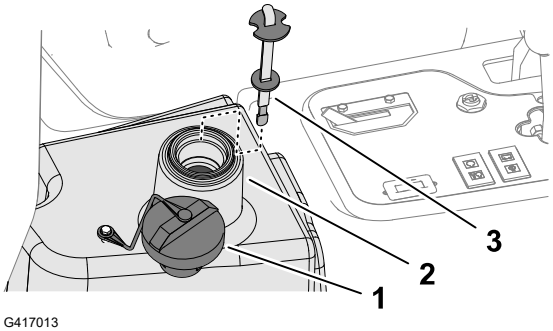
IMPORTANT

Use only the hydraulic fluids specified. Other fluids could cause system damage.

5. Install the dipstick (3) and cap (1) onto the filler neck (2).
6. Start the engine and use all hydraulic controls to distribute the hydraulic fluid throughout the system.
7. Check for leaks and then shut off the engine.
8. Check the fluid level and add enough to raise the level to full mark on the dipstick.



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IMPORTANT

Do not overfill the reservoir.

Changing the Hydraulic Filter

WARNING

Hot hydraulic fluid can cause severe burns, which could result in death or serious injury.

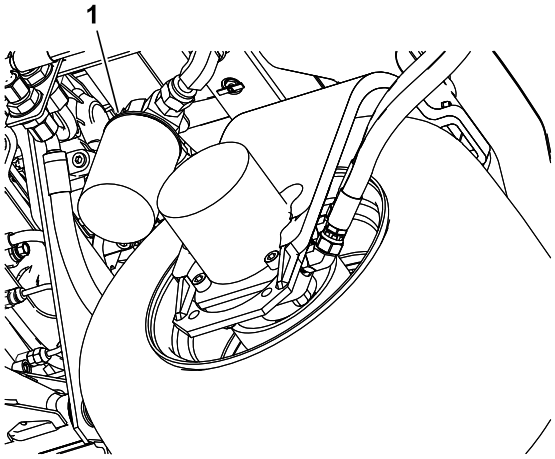
Allow the hydraulic fluid to cool before performing any maintenance to the hydraulic system.

Use a genuine Toro replacement filter (Part No. 86-3010).

IMPORTANT

Use of any other filter may void the warranty on some components.

1. Prepare the machine for maintenance.
2. Clean around the filter mounting area. Place a drain pan under the filter (1) and remove the filter.
3. Lubricate the new filter gasket and fill the filter with hydraulic fluid.
4. Ensure that the filter mounting area is clean. Screw the filter on until the gasket contacts the mounting plate; then tighten the filter 1/2 turn.
5. Start the engine and let it run for about 2 minutes to purge air from the system. Shut off the engine and check for leaks.



Cutting Unit Maintenance

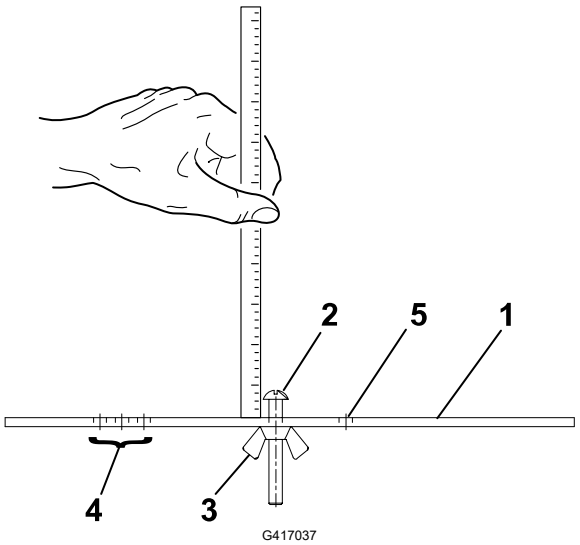
Checking the Reel-to-Bedknife Contact

Check the reel-to-bedknife contact even if the quality of cut had been acceptable previously.

Note: There must be light contact across the full length of the reel and bedknife.

Using the Optional Gauge Bar

Use the gauge bar to adjust the cutting unit. Refer to the cutting unit *Operator's Manual* for the adjustment procedure.



1. Gauge bar
2. Height adjusting screw
3. Nut
4. Holes used for setting groomer HOG
5. Hole not used

Backlapping the Cutting Units

WARNING

Contact with the cutting units or other moving parts could result in death or serious injury.

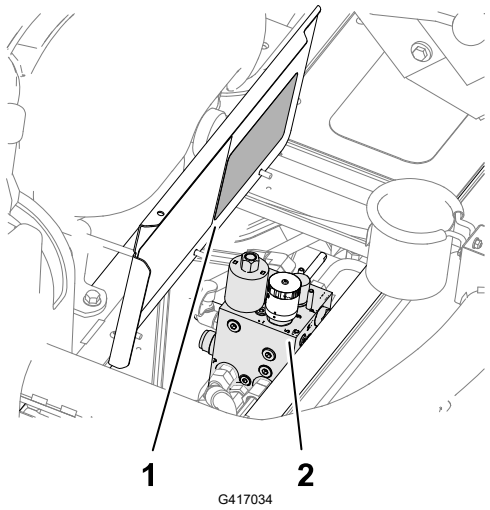
- **Keep your fingers, hands, and clothing away from the cutting units and other moving parts.**
- **Never attempt to turn the cutting units by hand or foot while the engine is running.**

Preparing the Machine

1. Prepare the machine for maintenance.

Backlapping the Cutting Units (continued)

2. Make the initial reel-to-bedknife adjustments appropriate for backlapping; refer to the cutting unit *Operator's Manual*.
3. Raise the platform cover to expose the mower manifold.

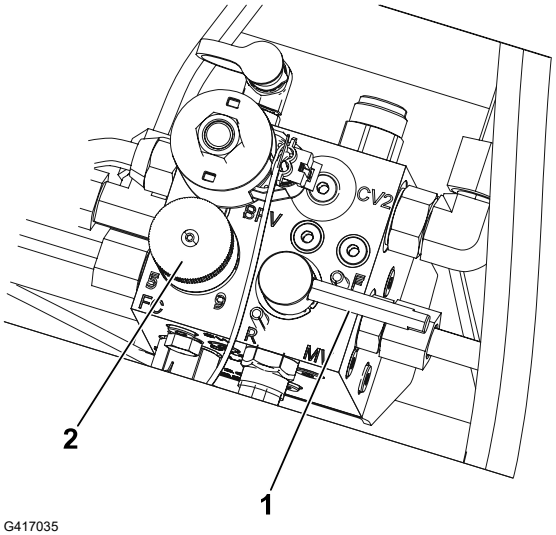


(1) Reel-speed chart decal (on the platform cover)

(2) Mower manifold

4. Record of the speed number at which the reel speed control knob (2) is set.
5. Set the reel speed control knob to position 1.
6. Move the backlap lever (1) to the R (backlap) position.

   Note: The machine is in the backlap mode when the mow/transport slide to the right (Mow) position and the backlap lever in the R (backlap) position.



Lapping the Reels and Bedknife

WARNING

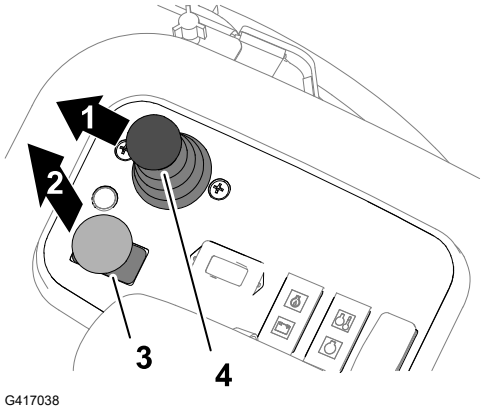
Changing the engine speed while backlapping may cause the cutting units to stall, which could result in death or serious injury.

- **Never change the engine speed while backlapping.**
- **Backlap only at idle engine speed.**

Backlapping the Cutting Units (continued)

1. Start the engine and allow it to run at low idle speed.
2. Press the cutting unit drive switch ③ to the ENGAGE ② position.
3. Move the lower mow/raise control lever ④ forward ①.

   Note: The reels of all cutting units rotate backward.
4. Apply lapping compound to the reel with a long-handle brush.



DANGER

Contacting the cutting units when they are moving will result in death or serious injury.

To avoid personal injury, ensure that you are clear of the cutting units before proceeding.

IMPORTANT

Never use a short-handled brush.

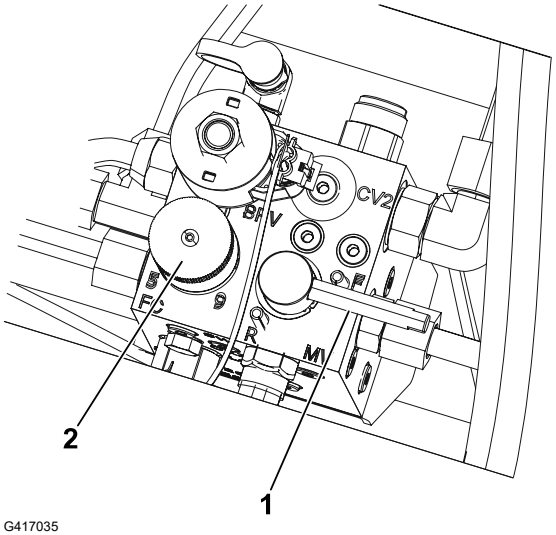
5. If the cutting units stall or become erratic while backlapping, adjust the reel speed control knob until the reel speed stabilizes, then return the reel speed to setting 1 or to your desired speed.
6. If you need to make an adjustment to the cutting units while backlapping, perform the following steps:
   A. Move the lower mow/raise control lever rearward.

      Note: The cutting units shut off, but do not raise.
   B. Press the cutting unit drive switch to the DISENGAGE position.
   C. Shut off the engine and remove the key.
   D. Adjust to the cutting units.
   E. Repeat steps 1 through 5.
7. Repeat step 4 for the other cutting units that you want to backlap.

Backlapping the Cutting Units (continued)

Finishing Backlapping

1. Press the cutting unit control switch to the DISENGAGE position.
2. Shut off the engine.
3. Move the backlap lever (1) to the F (mow) position.



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IMPORTANT

If you do not change backlap lever to the F (mow) position after backlapping, the cutting units will not raise or function properly.

4. Adjust the cutting unit reel speed control knob (2) to setting that you previously noted.
5. Close the floor panel.
6. Wash all lapping compound off of the cutting units.
7. For a better cutting edge, run a file across the front face of the bedknife after lapping.

   Note: This removes any burrs or rough edges that may have built up on the cutting edge.

Chassis Maintenance

Inspecting the Seat Belt

1. Inspect the seat belt for wear, cuts, and other damage. Replace the seat belt(s) if any component does not operate properly.
2. Clean the seat belt as necessary.

Cleaning

Washing the Machine

Wash the machine as needed using water alone or with a mild detergent. You may use a rag when washing the machine.

IMPORTANT

- **Do not use brackish or reclaimed water to clean the machine.**
- **Do not use power-washing equipment to wash the machine. Power-washing equipment may damage the electrical system, loosen important decals, or wash away necessary grease at friction points. Avoid excessive use of water near the control panel, engine, and battery.**
- **Do not wash the machine with the engine running. Washing the machine with the engine running may result in internal engine damage.**

Storing the Machine

1. Park the machine on a level surface, lower the cutting units, engage the parking brake, shut off the engine, and remove the key.
2. Thoroughly clean the traction unit, cutting units, and the engine.
3. Check the tire pressure.
4. Check all fasteners for looseness; tighten them as necessary.
5. Grease or oil all grease fittings and pivot points. Wipe up any excess lubricant.
6. Lightly sand and use touch-up paint on painted areas that are scratched, chipped, or rusted. Repair any dents in the metal body.
7. Service the battery and cables as follows:
   A. Remove the battery terminals from the battery posts.
   B. Clean the battery, terminals, and posts with a wire brush and baking-soda solution.
   C. Coat the cable terminals and battery posts with Grafo 112X skin-over grease (Toro Part No. 505-47) or petroleum jelly to prevent corrosion.
   D. Slowly charge the battery every 60 days for 24 hours to prevent lead sulfation of the battery.
8. Prepare the engine as follows:
   A. Drain the engine oil from the oil pan and install the drain plug.
   B. Remove and discard the oil filter. Install a new oil filter.
   C. Fill the engine with specified motor oil.
   D. Start the engine and run it at idle speed for approximately 2 minutes.
   E. Shut off the engine and remove the key.
   F. Flush the fuel tank with fresh, clean fuel.
   G. Secure all the fuel-system fittings.
   H. Thoroughly clean and service the air-cleaner assembly.
   I. Seal the air-cleaner inlet and the exhaust outlet with weatherproof tape.
   J. Check the antifreeze protection and add a 50/50 solution of water and ethylene glycol antifreeze as needed for the expected minimum temperature in your area.

Storing the Battery

If you are storing the machine for more than 30 days, remove the battery and charge it fully. Either store it on the shelf or on the machine. Leave the cables disconnected if they are stored on the machine. Store the battery in a cool atmosphere to avoid quick deterioration of

the charge in the battery. To prevent the battery from freezing, ensure that it is fully charged. The specific gravity of a fully charged battery is 1.265 to 1.299.

Diagnostic ACE Display

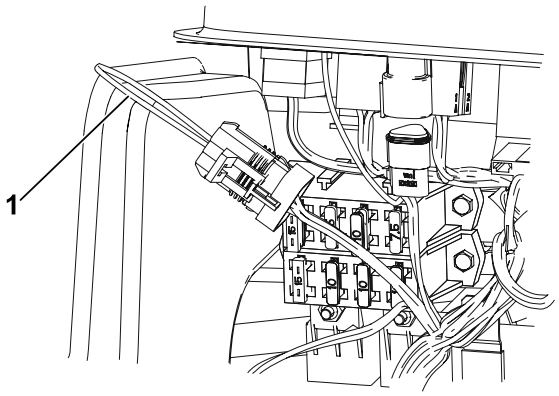
The machine is equipped with an electronic controller that controls most machine functions. The controller determines what function is required for various input switches (i.e., seat switch, key switch, etc.) and turns on the outputs to actuate solenoids or relays for the requested machine function.

For the electronic controller to control the machine as desired, each of the input switches, output solenoids, and relays must be connected and functioning properly.

Use the Diagnostic ACE display to help verify and correct electrical functions of the machine.

Verifying the Interlock Switch Function

1. Park the machine on a level surface, lower the cutting units, engage the parking brake, and shut off the engine.
2. Remove the cover from the control panel.
3. Locate the wire harness and loop-back connector (1).
4. Carefully unplug the loop-back connector from the harness connector.



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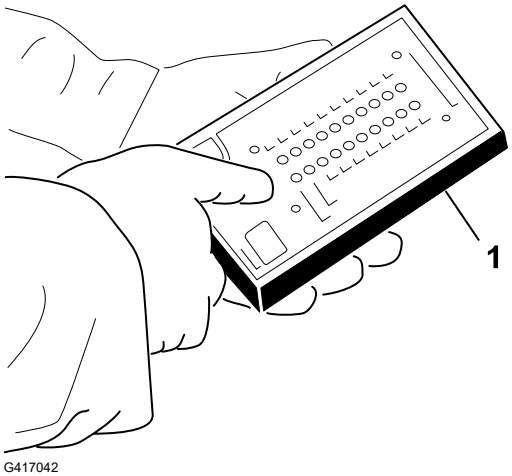
5. Connect the Diagnostic ACE (1) display connector to the harness connector.

   Note: Ensure that the correct overlay decal is positioned on the Diagnostic ACE display.
6. Turn the key switch to the On position, but do not start the machine.

   Note: The red text on the overlay decal refers to input switches and the green text refers to outputs.
7. The “inputs displayed” LED, on the lower right column of the Diagnostic ACE, should illuminate. If the “outputs displayed” LED illuminates, press the toggle button, on Diagnostic ACE, to change LED to “inputs displayed.”



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The Diagnostic ACE illuminates the LED associated with each of the inputs when that input switch is closed.

8. Individually, change each of the switches from open to closed (i.e., sit on the seat, engage the traction pedal, etc.), and note that the appropriate LED on the Diagnostic ACE blinks on and off when the corresponding switch is closed. Repeat this for all switches that you can change by hand.
9. If a switch is closed and the appropriate LED does not turn on, check all wiring and connections to the switch and/or check the switches with an ohm meter or multimeter. Replace any malfunctioning switches and repair any malfunctioning wiring.

   Note: The Diagnostic ACE is also able to detect which output solenoids or relays are turned on. This is a quick way to determine if a machine malfunction is electrical or hydraulic.

Verifying Output Function

1. Park the machine on a level surface, lower the cutting units, engage the parking brake, shut off the engine, and remove the key.
2. Remove the access panel from the side of the control arm.
3. Locate the wire harness and connectors near the controller.
4. Carefully unplug the loop-back connector from the harness connector.
5. Connect the Diagnostic ACE connector to the harness connector.

   Note: Make sure that the correct overlay decal is positioned on the Diagnostic ACE.
6. Turn the key switch to the On position, but do not start the machine.

   Note: The red text on the overlay decal refers to input switches and the green text refers to outputs.
7. The “outputs displayed” LED, on lower right column of Diagnostic ACE, should illuminate. If the “inputs displayed” LED illuminates, press the toggle button, on the Diagnostic ACE, to change the LED to “outputs displayed.”

   Note: It may be necessary to toggle between “inputs displayed” and “outputs displayed” several times to do the following step. To toggle back and forth, press the toggle button once. You may do this as often as needed. Do not hold the button.
8. Sit on the seat and attempt to operate the desired function of the machine. The appropriate output LEDs should illuminate to indicate that the ECM is turning on that function.

   Note: If the correct output LEDs do not illuminate, verify that the required input switches are in the necessary positions to allow that function to occur. Verify correct switch function. If the output LEDs are on as specified, but the machine does not function properly, this indicates a non-electrical problem. Repair as necessary.

   Note: If each output switch is in the correct position and functioning correctly, but the output LEDs are not correctly illuminated, this indicates an ECM problem. If this occurs, contact your authorized Toro distributor for assistance.

IMPORTANT

The Diagnostic ACE display must not be left connected to the machine. It is not designed to withstand the environment of the everyday use of the machine. When you are finished using the Diagnostic ACE, disconnect it from the machine and connect the loop-back connector to the harness connector. The machine does not operate without the loop-back connector installed on the harness. Store the Diagnostic ACE in a dry, secure location in the shop, not on the machine.

California Proposition 65 Warning Information

What is this warning?

You may see a product for sale that has a warning label like the following:

WARNING: Cancer and Reproductive Harm—www.p65Warnings.ca.gov.

What is Prop 65?

Prop 65 applies to any company operating in California, selling products in California, or manufacturing products that may be sold in or brought into California. It mandates that the Governor of California maintain and publish a list of chemicals known to cause cancer, birth defects, and/or other reproductive harm. The list, which is updated annually, includes hundreds of chemicals found in many everyday items. The purpose of Prop 65 is to inform the public about exposure to these chemicals.

Prop 65 does not ban the sale of products containing these chemicals but instead requires warnings on any product, product packaging, or literature with the product. Moreover, a Prop 65 warning does not mean that a product is in violation of any product safety standards or requirements. In fact, the California government has clarified that a Prop 65 warning "is not the same as a regulatory decision that a product is 'safe' or 'unsafe.'" Many of these chemicals have been used in everyday products for years without documented harm. For more information, go to https://oag.ca.gov/prop65/faqs-view-all.

A Prop 65 warning means that a company has either (1) evaluated the exposure and has concluded that it exceeds the "no significant risk level"; or (2) has chosen to provide a warning based on its understanding about the presence of a listed chemical without attempting to evaluate the exposure.

Does this law apply everywhere?

Prop 65 warnings are required under California law only. These warnings are seen throughout California in a wide range of settings, including but not limited to restaurants, grocery stores, hotels, schools, and hospitals, and on a wide variety of products. Additionally, some online and mail order retailers provide Prop 65 warnings on their websites or in catalogs.

How do the California warnings compare to federal limits?

Prop 65 standards are often more stringent than federal and international standards. There are various substances that require a Prop 65 warning at levels that are far lower than federal action limits. For example, the Prop 65 standard for warnings for lead is 0.5 µg/day, which is well below the federal and international standards.

Why don't all similar products carry the warning?

- Products sold in California require Prop 65 labelling while similar products sold elsewhere do not.
- A company involved in a Prop 65 lawsuit reaching a settlement may be required to use Prop 65 warnings for its products, but other companies making similar products may have no such requirement.
- The enforcement of Prop 65 is inconsistent.
- Companies may elect not to provide warnings because they conclude that they are not required to do so under Prop 65; a lack of warnings for a product does not mean that the product is free of listed chemicals at similar levels.

Why does Toro include this warning?

Toro has chosen to provide consumers with as much information as possible so that they can make informed decisions about the products they buy and use. Toro provides warnings in certain cases based on its knowledge of the presence of one or more listed chemicals without evaluating the level of exposure, as not all the listed chemicals provide exposure limit requirements. While the exposure from Toro products may be negligible or well within the "no significant risk" range, out of an abundance of caution, Toro has elected to provide the Prop 65 warnings. Moreover, if Toro does not provide these warnings, it could be sued by the State of California or by private parties seeking to enforce Prop 65 and subject to substantial penalties.

Notes:

TORO