



Form No. 3443-831 Rev A

Count on it.

Operator's Manual

Rear Tine Tiller

Model No. 58603—Serial No. 321000001 and Up



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.

⚠ WARNING

**CALIFORNIA
Proposition 65 Warning**

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

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

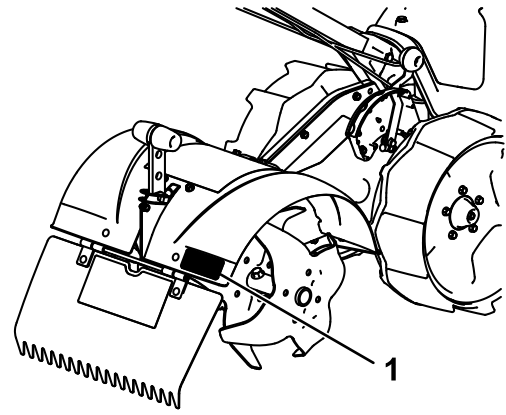


Figure 1

1. Model and serial number location

g356747

Model No. _____

Serial No. _____

Introduction

This tiller is intended to be used by residential homeowners or professional, hired operators to break through hard soil conditions for planting and cultivating gardens. 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.

Visit www.Toro.com for more information, including safety tips, 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. [Figure 1](#) identifies the location of the model and serial numbers on the product. Write the numbers in the space provided.

This manual identifies potential hazards and has safety messages identified by the safety-alert symbol ([Figure 2](#)), which signals a hazard that may cause serious injury or death if you do not follow the recommended precautions.



Figure 2

Safety-alert symbol

g000502

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

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Safety

This machine has been designed in accordance with ANSI B71.8-2016.

⚠ DANGER

There may be buried utility lines in the work area. Digging into them may cause a shock or an explosion.

Have the property or work area marked for buried lines and do not dig in marked areas. Contact your local marking service or utility company to have the property marked (for example, in the US, call 811 for the nationwide marking service).

General Safety

This product is capable of amputating hands and feet and of throwing objects. Always follow all safety instructions to avoid serious personal injury or death.

- Read, understand, and follow the instructions and warnings in this *Operator's Manual* and on the machine and attachments before starting the engine.
- Be thoroughly familiar with the controls and the proper use of the equipment. Know how to stop the machine and disengage the controls quickly.
- Do not put your hands, feet, other body parts, or clothing near or under the rotating tines or other moving parts of the machine.
- Do not operate the machine without all proper shields, guards, and other safety protective devices in place and functioning properly on the machine.
- Keep bystanders, especially small children, and pets out of the operating area.
- Do not allow children to operate the machine. Allow only people who are responsible, trained, familiar with the instructions, and physically capable to operate the machine.
- Shut off the machine and wait for all moving parts to stop before you leave the operator's position. Disconnect the spark-plug wire, keep it away from the plug to prevent accidental starting, and allow the machine to cool before adjusting, fueling, unclogging, servicing, cleaning, or storing the machine.

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.

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.

⚠ WARNING: Cancer and Reproductive Harm - www.P65Warnings.ca.gov.
For more information, please visit www.tcoCAProp65.com
CALIFORNIA SPARK ARRESTER WARNING
Operation of this equipment may create sparks that can start fires around dry vegetation. A spark arrester may be required. The operator should contact local fire agencies for laws or regulations relating to fire prevention requirements.

133-8062
decal133-8062

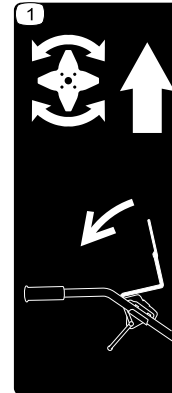
133-8062



decal144-4853

144-4853

1. Engine—shut off



decal144-4861

144-4861

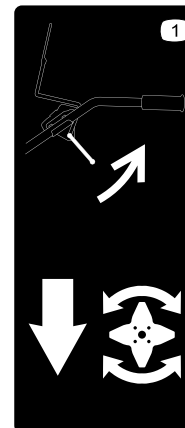
1. Forward lever



decal144-4857

144-4857

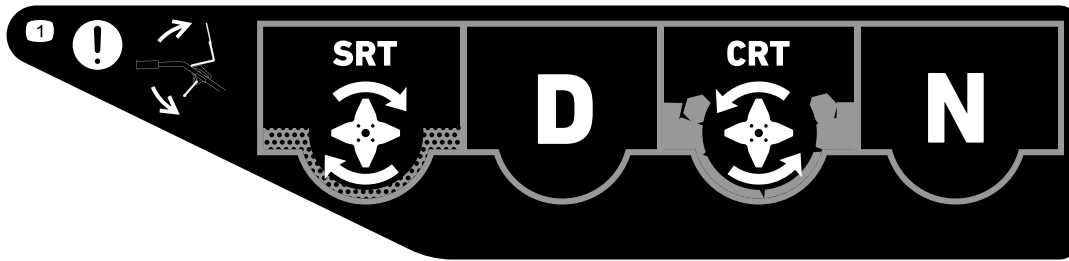
1. Entanglement hazard, belt—stay away from moving parts; keep all guards in place.



decal144-4862

144-4862

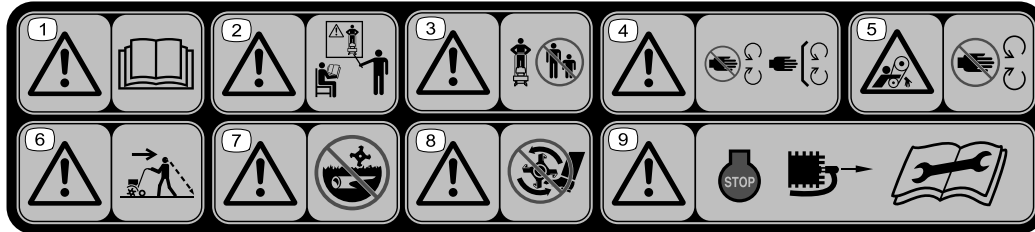
1. Reverse lever



144-4864

decal144-4864

1. Drive mode selector; Standard-Rotating Tines; Drive; Counter-Rotating Tines; Neutral.



144-4866

decal148-4866

- | | |
|---|--|
| <ol style="list-style-type: none"> 1. Warning—read the <i>Operator's Manual</i>. 2. Warning—all operators should be trained before operating the machine. 3. Warning—keep bystanders away. 4. Warning—stay away from moving parts; keep all guards in place. 5. Entanglement hazard, belt—stay away from moving parts. | <ol style="list-style-type: none"> 6. Warning—look behind you when operating the machine in reverse. 7. Warning—do not operate over buried lines. 8. Warning—keep feet away from moving parts. 9. Warning—shut off the engine, disconnect the spark plug, and read the <i>Operator's Manual</i> before performing maintenance. |
|---|--|



144-4867

decal144-4867

1. To start the machine, move the switch to the ON position, move the fuel-valve lever to open, move the throttle lever to the FAST position, engage the choke, place one hand on the machine and pull the recoil handle, and move the choke lever to the RUN position.

Setup

Loose Parts

Use the chart below to verify that all parts have been shipped.

Procedure	Description	Qty.	Use
1	Tiller assembly	1	Assemble the machine.
	Handlebar assembly	1	
	Handlebar tube	1	
	Wheel	2	
	Lower pulley guard	1	
	Pulley guard plate	1	
	Drag stake	1	
	Bolt (M8 x 85 mm)	1	
	Bolt (M6 x 65 mm)	2	
	Bolt (M8 x 16 mm)	2	
	Bolt (M6 x 14 mm)	4	
	Nut (M8)	1	
	Nut (M6)	4	
	Screw	4	
Pin	2		
Lock pin	1		
2	Engine oil	1	Add oil to the engine.

1

Assembling the Machine

Parts needed for this procedure:

1	Tiller assembly
1	Handlebar assembly
1	Handlebar tube
2	Wheel
1	Lower pulley guard
1	Pulley guard plate
1	Drag stake
1	Bolt (M8 x 85 mm)
2	Bolt (M6 x 65 mm)
2	Bolt (M8 x 16 mm)
4	Bolt (M6 x 14 mm)
1	Nut (M8)
4	Nut (M6)
4	Screw
2	Pin
1	Lock pin

Procedure

1. Remove the loose parts from the top of the box.
2. Close the box, turn it upside-down, and cut it open at the corners.
3. Cut, remove, and discard the rectangle shown on both sides of the foam.

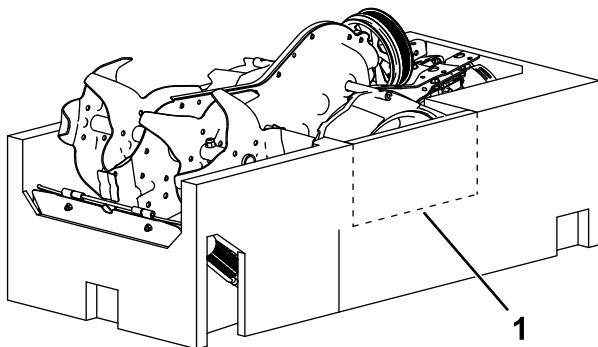


Figure 3

g361865

1. Cut here.

4. Remove the wheels.

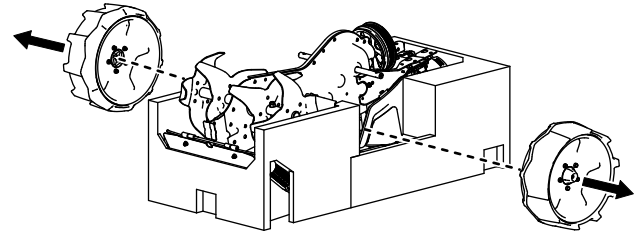


Figure 4

g361871

5. Assemble the pulley guards.

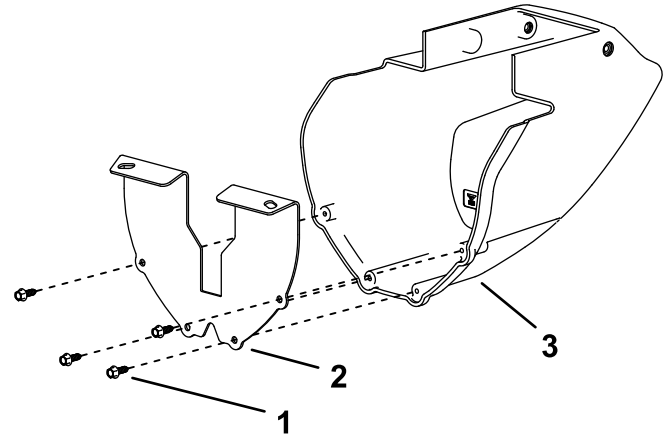


Figure 5

g361864

1. Screw (4)
2. Pulley guard plate
3. Lower pulley guard

6. Install the guards to the tiller assembly.

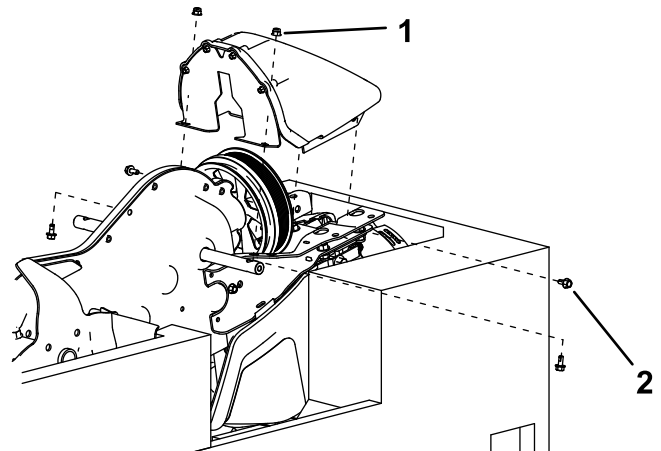


Figure 6

g361866

1. Bolt—M6 x 14 mm (4)
2. Nut—M6 (2)

7. For each wheel, slide in the pin and secure the wheel with the bolt.

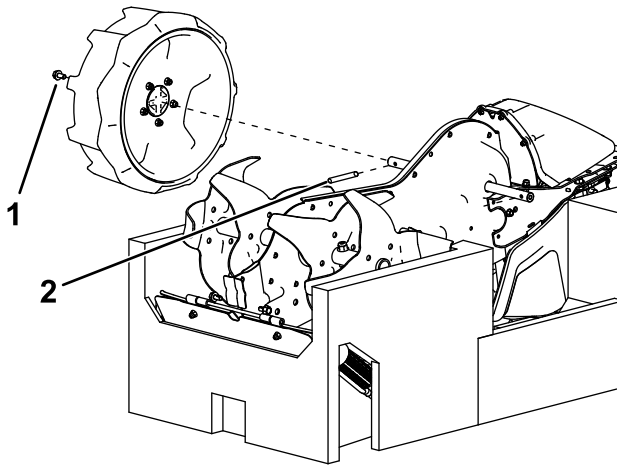


Figure 7

g361868

1. Bolt—M8 x 16 mm (2)
2. Pin (2)

8. Turn the machine over and remove the foam.

9. Install the handlebar tube as follows:

- A. Rotate the spreader bolt clockwise.

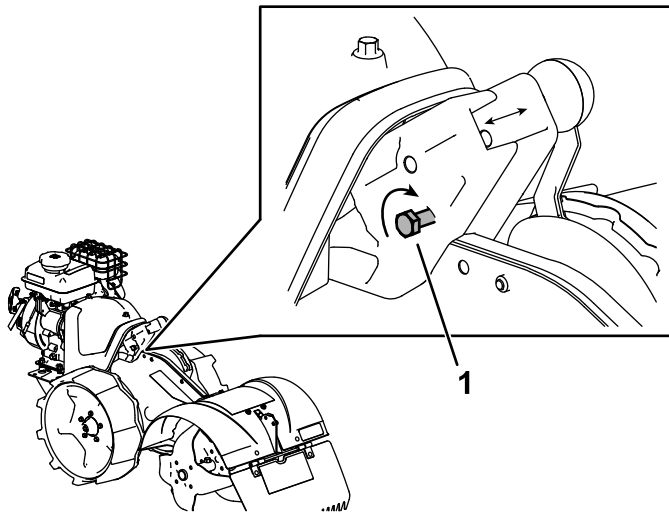


Figure 8

g361872

1. Spreader bolt

- B. Insert the handlebar tube into the red bracket and secure it as shown.

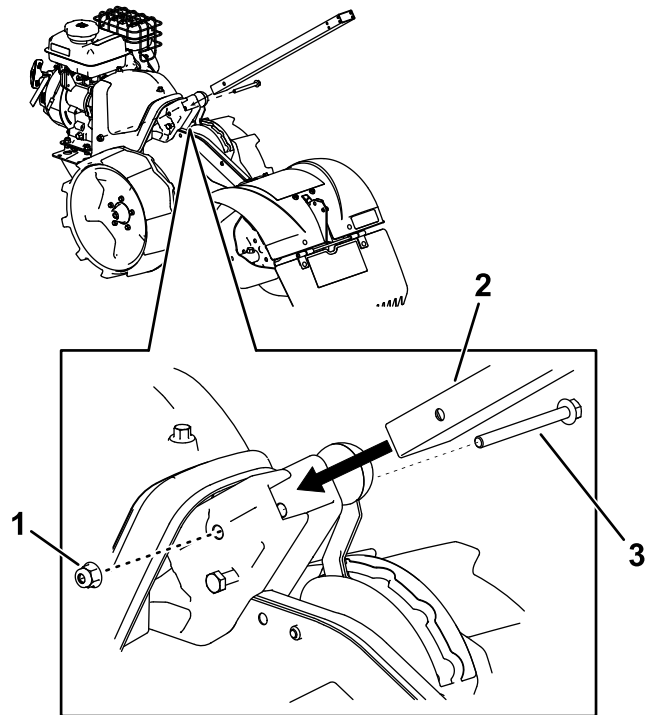


Figure 9

g361867

1. Nut (M8)
2. Handlebar tube
3. Bolt (M8 x 85 mm)

- C. Remove and discard the spreader bolt.

- D. Tighten the fasteners until the handlebar tube is snug.

10. On the handlebar assembly, connect the cables to the drive levers if they are not attached.

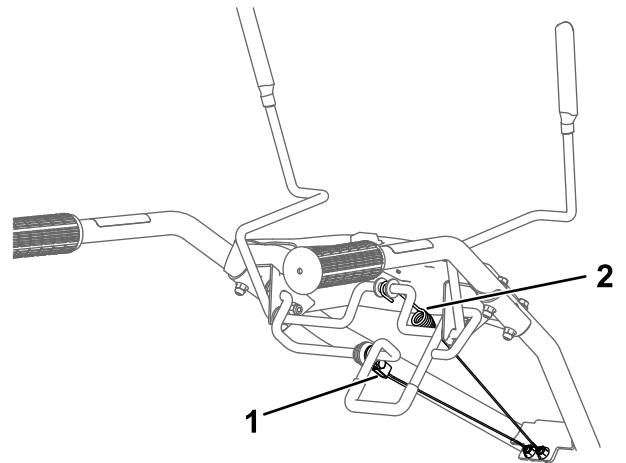


Figure 10

g361873

1. Rear drive lever cable
2. Front drive lever cable

11. Install the handlebar assembly and adjust the height as desired; refer to [Adjusting the Handlebar Height \(page 13\)](#).

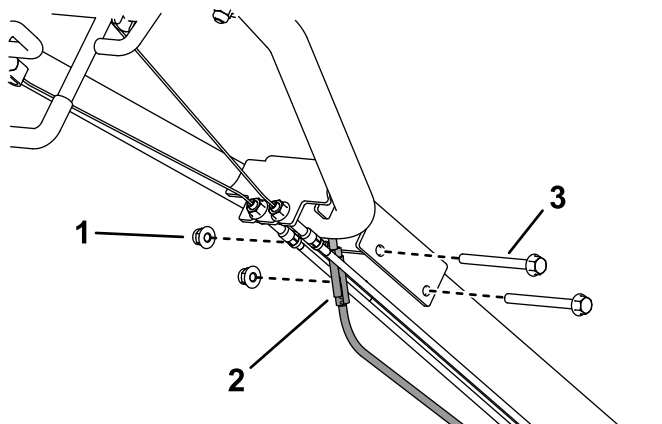


Figure 11

1. Nut—M6 (2)
2. Wire harness connectors
3. Bolt—M6 x 65 mm (2)

12. Connect the 2 wire harness connectors.
13. Install the drag stake.

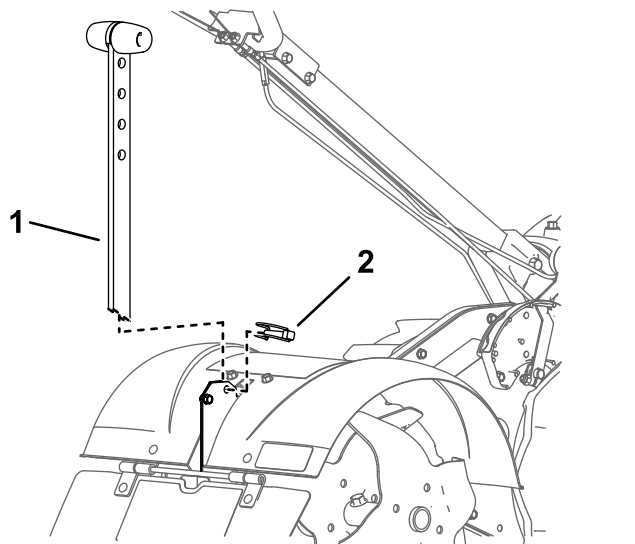


Figure 12

1. Drag stake
2. Lock pin

2

Adding Oil to the Engine

Parts needed for this procedure:

1	Engine oil
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Procedure

1. Move the machine to a level surface.
2. Remove the dipstick.

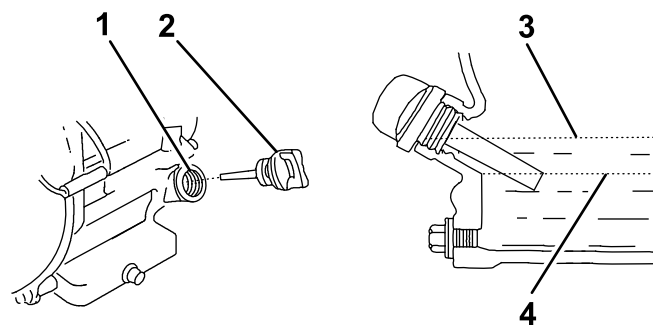


Figure 13

1. Filler tube
2. Dipstick
3. Upper limit
4. Lower limit

3. Slowly add oil into the filler tube until it is overflowing.
4. Install the dipstick and tighten it.

Product Overview

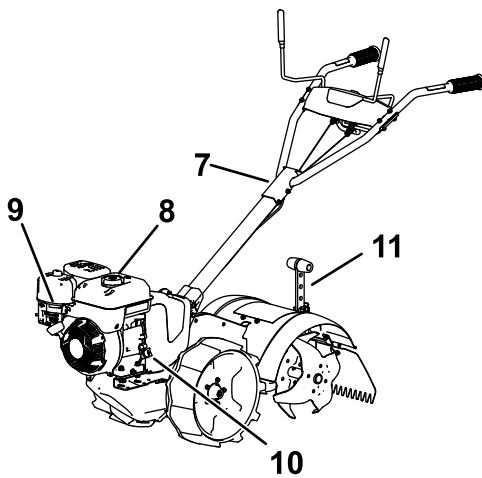
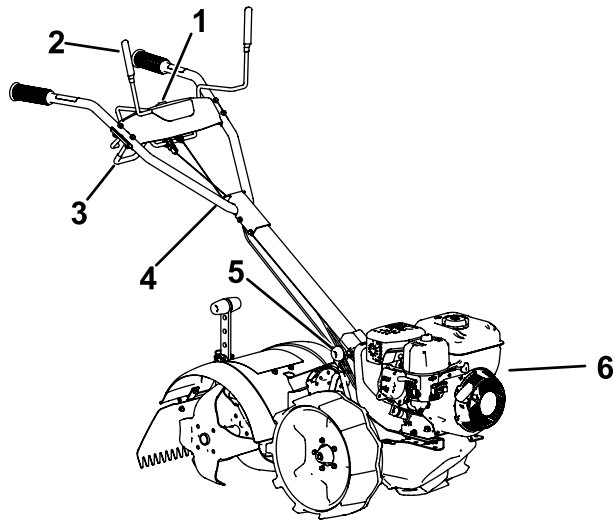


Figure 14

- | | |
|------------------------------|--------------------------------|
| 1. Engine on/off switch | 7. Handlebar height adjustment |
| 2. Forward control lever | 8. Fuel cap |
| 3. Rear control lever | 9. Engine controls |
| 4. Cable adjustment | 10. Oil-fill cap |
| 5. Drive-mode selector lever | 11. Drag stake |
| 6. Recoil handle | |

g356778

Controls

Engine On/Off Switch

Use the engine On/Off switch to shut the engine off. Ensure that the switch is in the ON position before starting the engine.

Fuel-Valve Lever

Move the lever for the fuel valve to the ON position before attempting to start the engine. After operation, shut off the engine and move the fuel-valve lever to the OFF position.

Throttle Control

The throttle controls the engine speed, and it has a continuous-variable setting.

Operate the machine using full throttle for best performance.

Choke Lever

Move the choke lever on the engine to the CHOKE position when initially starting a cold engine, then move it into the RUN position once started.

Drive-Mode Selector

Shift the drive-mode selector lever to the desired mode to change the transmission.

Important: Do not shift the drive-mode selector lever while engaging the forward or reverse control levers.

- **Standard-rotating tines (SRT):** The wheels and tines are both engaged with the engine; the tines spin in the **same** direction as the wheels. Use this mode for established garden beds and tilling in soft soil conditions.

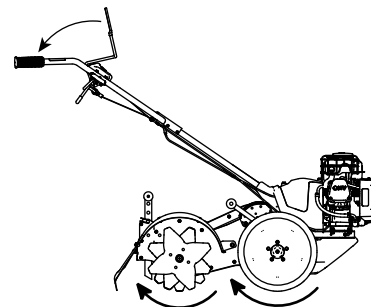


Figure 15

g356990

- **Drive:** Only the wheels are engaged with the engine; the tines are disengaged. Use this mode for powered transportation when driving up steep inclines and moving the machine to and from your garden.

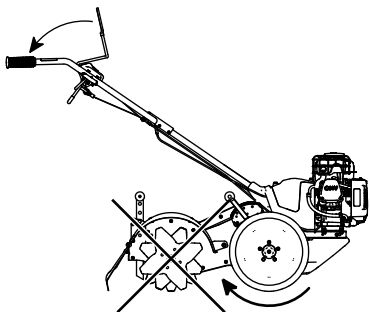


Figure 16

g356988

- **Counter-rotating tines (CRT):** The wheels and tines are both engaged with the engine; the tines spin in the **opposite** direction of the wheels. Use this mode when breaking new ground or tilling in compacted soil conditions.

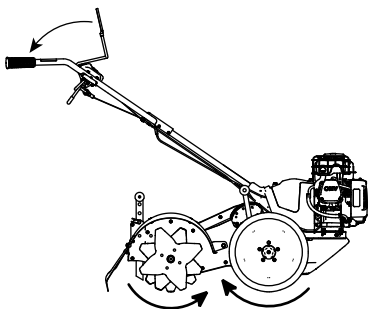


Figure 17

g356987

- **Neutral:** The wheels and tines are both disengaged from the engine. Use this mode for storage and non-powered transportation.

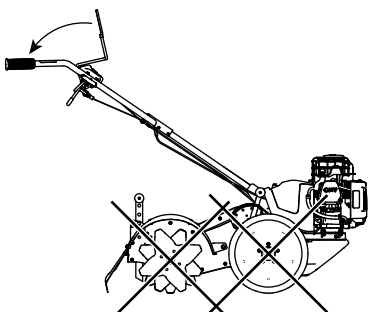


Figure 18

g356989

Drive-Control Levers

Pull down the forward lever to engage the transmission in the forward direction; pull up on the reverse lever to engage the transmission in the reverse direction.

Release the levers to disengage the transmission.

Important: Do not attempt to engage the forward and reverse levers at the same time.

⚠ WARNING

Contact with moving tines can result in personal injury.

When moving the machine in reverse, watch for obstacles behind you and keep your feet away from the tines.

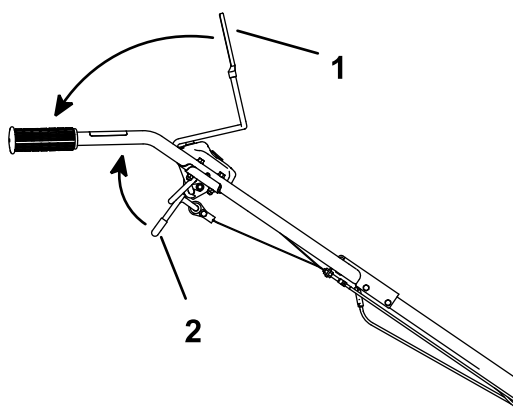


Figure 19

g357052

1. Forward lever

2. Reverse lever

Specifications

Specifications and design are subject to change without notice.

Height	103.1 cm (40.6 inches)
Length	158.8 cm (62.5 inches)
Width	50.8 cm (20.0 inches)
Weight	72.6 kg (160 lb)
Tilling width	43.2 cm (17 inches)
Tilling depth	28 cm (11 inches)

To ensure optimum performance and continued safety certification of the machine, use only genuine Toro replacement parts and accessories. Replacement parts and accessories made by other manufacturers could be dangerous, and such use could void the product warranty.

Operation

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

Before Operation

Before Operation Safety

General Safety

- Do not allow children or untrained adults to operate or service the machine. Local regulations may restrict the age of the operator.
 - Using this machine is strenuous. You must be in good physical condition and mentally alert. If you have any condition that might be aggravated by strenuous work, check with your doctor before operating the machine.
 - Shut off the machine and wait for all moving parts to stop before you leave the operator's position. Disconnect the spark-plug wire, keep it away from the plug to prevent accidental starting, and allow the machine to cool before adjusting, fueling, unclogging, servicing, cleaning, or storing the machine.
 - Become familiar with the safe operation of the equipment, operator controls, and safety signs.
 - Check that all guards and safety devices, such as deflectors, are in place and functioning properly. Do not operate the machine unless they are functioning properly.
 - Know how to shut off the engine quickly.
 - Keep bystanders, especially small children, and pets out of the operating area.
 - Thoroughly inspect the area where you will use the machine and remove all objects that could interfere with the operation of the machine or that the machine could throw.
- Do not fill the fuel tank indoors.
 - Do not overfill the fuel tank. Replace the fuel cap and tighten it securely after fueling. Clean up spilled fuel before starting the engine.
 - Do not fill containers inside a vehicle or on a truck or trailer bed with a plastic liner. Always place containers on the ground, away from the vehicle before filling.
 - Remove the machine from the truck or trailer before filling the fuel tank. If this is not possible, then add fuel from a portable container rather than from a fuel-dispenser nozzle.
 - Keep the fuel-dispenser nozzle in contact with the rim of the fuel tank or container opening at all times until fueling is complete. Do not use a nozzle lock-open device.
 - If you spill fuel on your clothing, change your clothing immediately.
 - If you spill fuel, do not attempt to start the engine; move the machine away from the spill and avoid creating a source of ignition until the fuel vapors have dissipated.
 - If you must drain the fuel tank, do it outdoors.
 - Store fuel in a fuel container and keep it out of the reach of children.
 - Do not store the machine with fuel in the fuel tank or fuel container where there is an open flame, spark, or pilot light, such as on a water heater or other appliance. Allow the engine to cool before storing the machine in any enclosure.
 - Fuel is harmful or fatal if swallowed. Long-term exposure to vapors can cause serious injury and illness.
 - Avoid prolonged breathing of vapors.
 - Keep your hands and face away from the nozzle and the fuel-tank opening.
 - Keep fuel away from your eyes and skin.

Fuel Safety

- Use extreme care in handling fuel. It is extremely 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 add fuel to the tank while the engine is running or hot.
- Allow the engine to cool before filling the fuel tank.

Adding Fuel

Fuel Specifications

Type	Unleaded gasoline
Minimum octane rating	87 (US) or 91 (research octane; outside the US)
Ethanol	No more than 10% by volume
Methanol	None
MTBE (methyl tertiary butyl ether)	Less than 15% by volume
Oil	Do not add to the fuel

Use only clean, fresh (no more than 30 days old), fuel from a reputable source.

Using Stabilizer/Conditioner

Use fuel stabilizer/conditioner in the machine to keep the fuel fresh longer when used as directed by the fuel-stabilizer manufacturer.

Important: Do not use fuel additives containing methanol or ethanol.

Add the amount of fuel stabilizer/conditioner to fresh fuel as directed by the fuel-stabilizer manufacturer.

Filling the Fuel Tank

Fill the fuel tank as shown in [Figure 20](#).

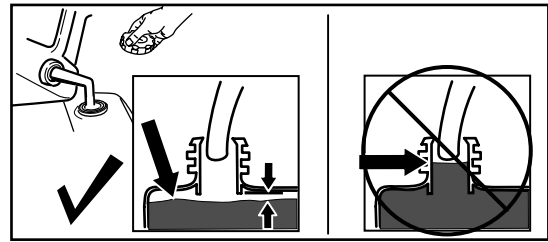


Figure 20

g230458

Adjusting the Handlebar Height

The handlebar has 3 height positions to accommodate varying user heights. When adjusting the height, note that during normal tilling operation, the actual handlebar position drops up to 25 cm (10 inches) from normal height.

Remove the hardware from the handlebar assembly, rotate the assembly to match the holes at the desired position, and install the hardware.

- Low height: Use holes B and C.
- Middle height: Use holes C and D.
- High height: Use holes A and D.

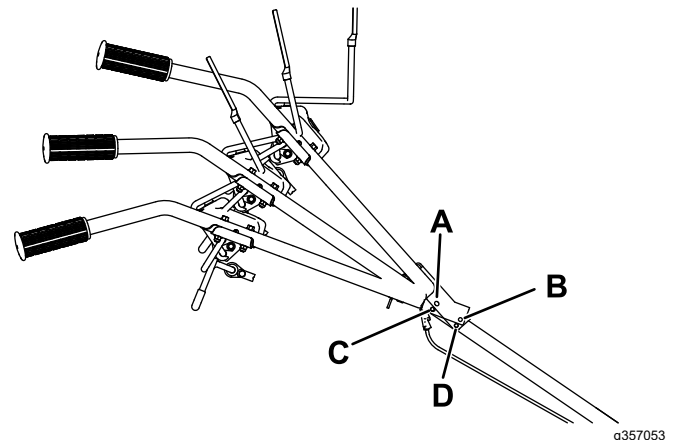


Figure 21

g357053

During Operation

During Operation Safety

General Safety

- 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 operate the machine while ill, tired, or under the influence of alcohol or drugs.
- Wear appropriate clothing, including eye protection; long pants; substantial, slip-resistant footwear; hearing protection; and gloves. Tie back long hair and do not wear loose clothing or loose jewelry.
- Keep your hands, feet, other body parts, and clothing away from rotating tines and moving parts of the machine. The tines begin rotating when you start the engine and may continue to rotate momentarily after you shut off the engine.
- Start the engine carefully according to instructions in this *Operator's Manual* and with your feet well away from the tines.
- Use extreme caution when reversing or pulling the machine toward you. To avoid getting pinned against a structure, allow enough distance to reverse direction near a wall or fence.
- Keep bystanders out of the operating area. Keep small children out of the operating area and under the watchful care of a responsible adult who is not operating the machine. Stop the machine if anyone enters the area.
- Before you start the engine, ensure that all drives are in neutral and you are in the operating position.
- Operate the machine only in good visibility and appropriate weather conditions. Do not operate the machine when there is the risk of lightning.
- Do not attempt to adjust the machine while the engine is running.
- If the machine strikes an object or starts to vibrate abnormally, immediately shut off the engine, wait for all moving parts to stop, and disconnect the wire from the spark plug before examining the machine for damage. Vibration is often a warning sign of trouble. Make all necessary repairs before resuming operation.
- Do not operate the machine at high transport speeds on hard or slippery surfaces.
- Look behind and down and use care when reversing.
- Do not overload the machine capacity by attempting to till or cultivate too deep and at too fast a rate.
- Do not pick up or carry a machine while the engine is running.
- Exercise caution and be sure of your footing, especially when backing up, to avoid slipping or falling.
- Be careful when operating the machine in hard ground. The tines can catch in the ground and propel the machine forward. If this occurs, let go of the machine; do not try to restrain it.
- Exercise extreme caution when crossing gravel surfaces. Stay alert for hidden hazards or traffic.
- Do not leave a running machine unattended.
- Shut off the machine and wait for all moving parts to stop before you leave the operator's position. Disconnect the spark-plug wire, keep it away from the plug to prevent accidental starting, and allow the machine to cool before adjusting, fueling, unclogging, servicing, cleaning, or storing the machine.
- Operate the engine only in well-ventilated areas. Exhaust gases contain carbon monoxide, which is an odorless, deadly poison.
- Use only accessories and attachments approved by The Toro® Company.
- Do not change the engine governor settings or overspeed the engine.
- Always be sure of your footing; keep a firm hold on the handle and walk, never run.
- Allow the muffler and engine area to cool before touching them.
- The tines should not rotate when the engine is idling; if they do rotate, contact your Authorized Service Dealer.
- If an object becomes lodged in the tines, shut off the engine, disconnect the wire from the spark plug, and allow the engine to cool before removing the object.
- Do not operate the machine on steep slopes. To prevent overturning, operate the machine up and down the slope.

Starting the Machine

1. Move the engine on/off switch to the ON position.
2. Move the fuel-valve lever to the OPEN position.
3. Move the throttle lever to the FAST position.
4. Move the choke lever to the CHOKE position.

Note: A warm or hot engine may not require choking.

5. Pull the starter handle lightly until you feel resistance, then pull the handle briskly. Return the starter handle gently.
6. After the engine starts, gradually move the choke lever to the RUN position and the throttle lever to the FAST position.

Shutting Off the Engine

1. Release the drive-control levers.
2. Move the throttle lever to the SLOW position.
3. Move the engine on/off switch to the OFF position.
4. Move the fuel-valve lever to the CLOSED position.
5. Wait for all moving parts to stop before leaving the operating position.

Adjusting the Drag Stake

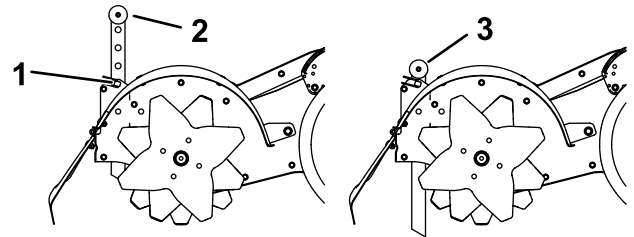
Adjust the drag stake as needed for the drive mode.

- **CRT mode:** The drag stake helps regulate tilling depth during CRT mode. Lower the drag stake to reduce the tilling depth; raise the drag stake to increase the tilling depth.
- **SRT mode:** The drag stake limits the forward speed during SRT mode. Lower the drag stake to reduce the forward speed or if the machine jerks forward
- **Drive or neutral mode:** Raise the drag stake when transporting the tiller.

1. Move the machine to a level surface, shut off the engine, and wait for all moving parts to stop.
2. Remove the lock pin.
3. Position the drag stake to the desired depth.

Note: Adjust the drag stake 1 hole at a time and test the tiller operation after each adjustment. Raising the drag stake too high can result in loss of control of the tiller.

4. Secure the drag stake with the lock pin.



g357054

Figure 22

1. Lock pin
2. Drag stake—deep tilling
3. Drag stake—shallow tilling

Operating Tips

- Inspect the area where you will use the machine and remove all objects such as large rocks, trash, and branches before tilling to prevent equipment damage.
- Do not place excessive body weight on the machine. Use the weight of the machine to till the soil more efficiently.
- When tilling, begin with a shallow cut on the first pass and then increase the depth by 2.5 to 5.1 cm (1 to 2 inches) on each successful path until you reach the desired depth.
- Plant garden rows 51 to 56 cm (20 to 22 inches) apart to allow ease of turning at the end of each row.
- When not tilling, move the throttle lever between half throttle and the SLOW position to extend engine life, conserve fuel, and reduce sound levels.

After Operation

After Operation Safety

General Safety

- Shut off the machine and wait for all moving parts to stop before you leave the operator's position. Disconnect the spark-plug wire, keep it away from the plug to prevent accidental starting, and allow the machine to cool before adjusting, fueling, unclogging, servicing, cleaning, or storing the machine.
- Clean debris from the machine to help prevent fires. Clean up oil or fuel spills.

Hauling Safety

- Disconnect the wire from the spark plug before loading the machine for hauling.
- Use care when loading or unloading the machine.

Maintenance

Maintenance Safety

- Inspect the machine frequently to ensure that it is in safe working condition and that shear bolts, engine-mounting bolts, and other fasteners are properly tightened.
- Shut off the machine and wait for all moving parts to stop before you leave the operator's position. Disconnect the spark-plug wire, keep it away from the plug to prevent accidental starting, and allow the machine to cool before adjusting, fueling, unclogging, servicing, cleaning, or storing the machine.
- Wear gloves and eye protection when servicing the machine.
- Never tamper with safety devices. Check their proper operation regularly.
- To ensure optimum performance of the machine, use only genuine Toro replacement parts and accessories. Replacement parts and accessories made by other manufacturers could be dangerous, and such use could void the product warranty.
- Replace tines that are bent, damaged, or loose; do not repair or alter them.
- Keep the machine, attachments, and accessories in safe working condition.
- Do not attempt to repair the machine unless you have the proper tools and instructions for disassembling, assembling, and repairing the machine.

Recommended Maintenance Schedule(s)

Maintenance Service Interval	Maintenance Procedure
After the first 5 hours	<ul style="list-style-type: none">• Change the engine oil.
Before each use or daily	<ul style="list-style-type: none">• Check the engine-oil level.• Clean debris from the muffler, controls, and air-intake grille.• Clean the tine and wheel shafts
Every 10 hours	<ul style="list-style-type: none">• Lubricate moving parts.• Check the belt tension.
Every 25 hours	<ul style="list-style-type: none">• Service the air cleaner (more often in dirty or dusty conditions).• Clean the pre-cleaner element.
Every 50 hours	<ul style="list-style-type: none">• Change the engine oil (more often in dusty conditions).• Replace the belts.• Check the muffler and spark arrester.
Yearly	<ul style="list-style-type: none">• Replace the pre-cleaner element.• Replace the fuel filter.• Replace the spark plug.• Check the belt tension.• Clean the engine air-cooling system (more often in dusty conditions).

Important: Refer to your engine manual for additional maintenance procedures

Pre-Maintenance Procedures

Preparing for Maintenance

1. Move the machine to a level surface, shut off the engine, and wait for all moving parts to stop.
2. Disconnect the spark-plug wire from the spark plug.

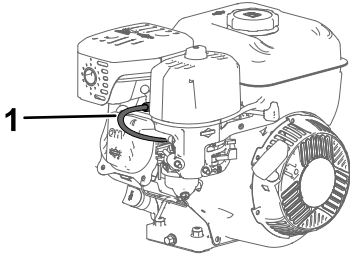


Figure 23

g361695

1. Spark-plug wire
-

3. After performing the maintenance procedure(s), connect the spark-plug wire to the spark plug.

Important: Before tipping the machine, allow the fuel tank to run dry through normal usage. If you must tip the machine prior to running out of fuel, use a hand fuel pump to remove the fuel.

Lubrication

Greasing the Machine

Grease type: White lithium grease

Grease the machine at the following locations:

- Forward and reverse arm assemblies
- Forward and reverse engagement levers
- Forward and reverse cables.

Engine Maintenance

Servicing the Air Cleaner

Service Interval: Every 25 hours/Yearly (whichever comes first)—Service the air cleaner (more often in dirty or dusty conditions).

Every 25 hours/Yearly (whichever comes first)—Clean the pre-cleaner element.

Yearly—Replace the pre-cleaner element.

Removing the Air Cleaner Elements

1. Clean around the air-cleaner cover to prevent dirt from getting into the engine and causing damage.
2. Loosen the fastener on the cover.
3. Remove the cover.
4. Remove the fastener on the elements.
5. Carefully remove the foam pre-cleaner and paper element from the base.

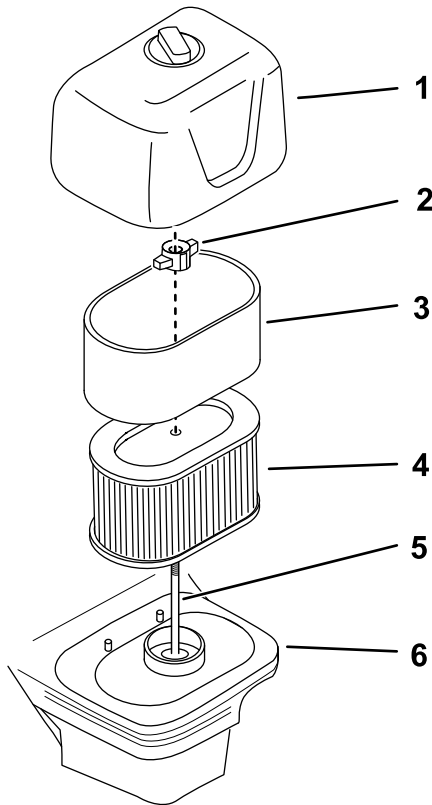


Figure 24

g359988

- | | |
|----------------|---------------------|
| 1. Cover | 4. Paper element |
| 2. Fastener | 5. Stud |
| 3. Pre-cleaner | 6. Air-cleaner base |

Servicing the Foam Element

1. Remove the foam pre-cleaner from the paper element.
2. Wash the pre-cleaner with warm water and a mild detergent.
3. Rinse the pre-cleaner and allow it to air dry.

Important: Replace the foam pre-cleaner if it is torn or worn. Do not oil the pre-cleaner.

Servicing the Paper Element

1. Clean the paper element by tapping it gently to remove dust.

Note: If it is very dirty, replace the paper element with a new one.

2. Inspect the element for tears, an oily film, or damage to the rubber seal.
3. Replace the element if it is damaged.

Important: Do not clean the paper element.

Installing the Air Cleaner Elements

1. Install the foam pre-cleaner element over the paper element.
- Note:** Ensure that you do not damage the elements.
2. Install the air-cleaner elements onto the air-cleaner base and onto the stud.
 3. Secure the elements using the fastener.
 4. Install the cover and secure it with the fastener.

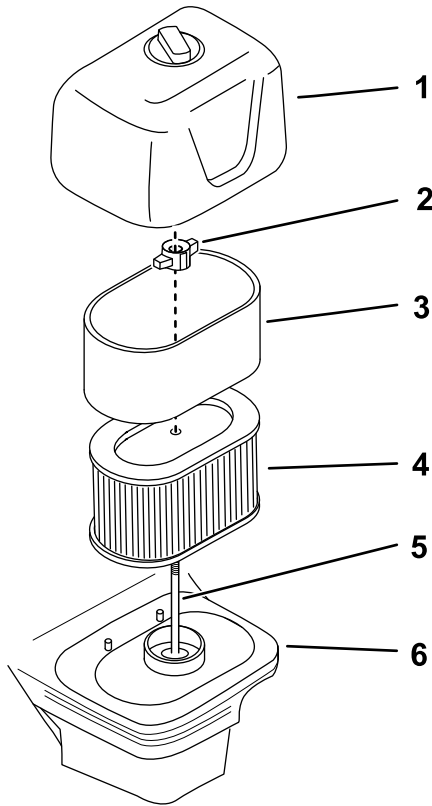


Figure 25

- | | |
|----------------|---------------------|
| 1. Cover | 4. Paper element |
| 2. Fastener | 5. Stud |
| 3. Pre-cleaner | 6. Air-cleaner base |

Servicing the Engine Oil

Engine-Oil Specifications

Engine oil capacity	0.54 to 0.59 L (18 to 20 fl oz)
Oil viscosity	Refer to the chart below.
API service classification	SJ or higher

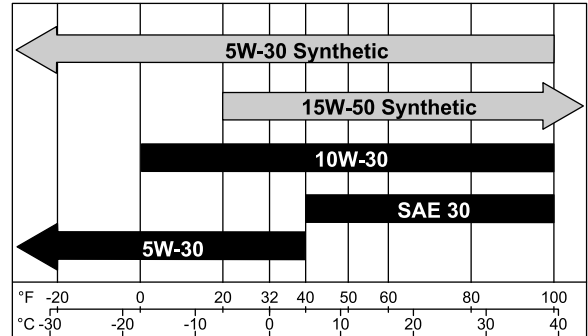


Figure 26

g359987

Checking the Engine-Oil Level

Service Interval: Before each use or daily

1. Move the machine to a level surface.
2. Remove the dipstick and wipe the end clean.

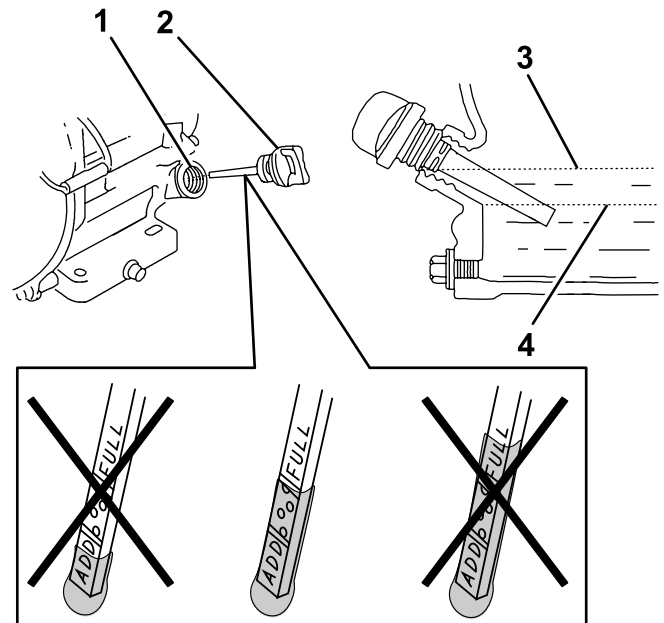


Figure 27

g360042

- | | |
|----------------|----------------|
| 1. Filler tube | 3. Upper limit |
| 2. Dipstick | 4. Lower limit |

3. Insert the dipstick fully into the oil-fill tube, **but do not turn or tighten it.**

- Remove the dipstick and check the engine-oil level. Ensure that the oil is at the top of the Full indicator on the dipstick..
- If the oil level is low, slowly add oil into the filler tube until it is overflowing.
- Install the dipstick and tighten it.

- Ensure that the oil is at the correct level on the dipstick; refer to [Checking the Engine-Oil Level \(page 20\)](#).
- Wipe up any spilled oil.

Changing the Engine Oil

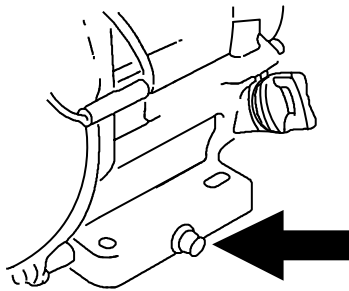
Service Interval: After the first 5 hours/After the first month (whichever comes first)—Change the engine oil.

Every 50 hours—Change the engine oil (more often in dusty conditions).

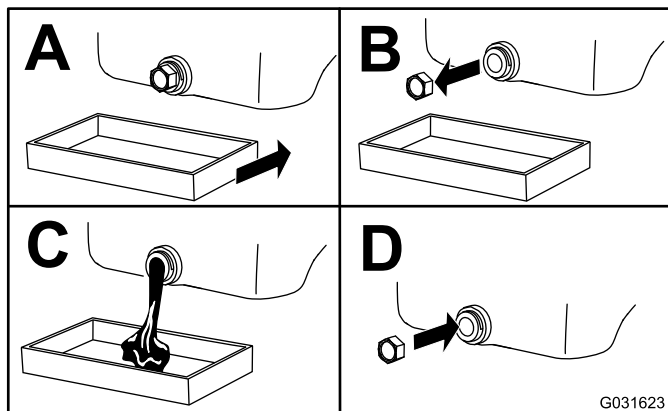
Note: Run the engine a few minutes before changing the oil to warm it. Warm oil flows better and carries more contaminants.

- Move the machine to a level surface.
- Refer to [Preparing for Maintenance \(page 18\)](#).
- Place a pan under the drain plug to catch the oil.
- Remove the oil-fill plug and allow the oil to drain.

Note: Dispose of the used oil at a certified recycling center.



g360043



G031623

g031623

Figure 28

- Install the oil-fill plug.
- Slowly pour oil into the oil-fill hole until the oil is at the correct level; refer to [Engine-Oil Specifications \(page 20\)](#).

Servicing the Spark Plug

Service Interval: Yearly

Ensure that the air gap between the center and side electrodes is correct before installing the spark plug.

Use a spark plug wrench for removing and installing the spark plug(s) and a gapping tool/feeler gauge to check and adjust the air gap. Install a new spark plug(s) if necessary.

Type: Briggs and Stratton 797235

Air gap: 0.75 mm (0.03 inch)

Removing the Spark Plug

- Disconnect the spark-plug wire from the spark plug.

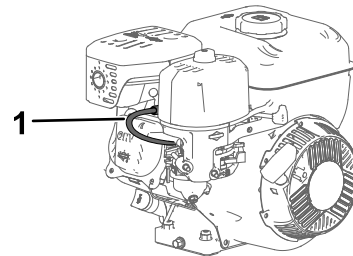


Figure 29

g361695

- Spark-plug wire
- Clean around the spark plugs to prevent dirt from entering the engine and potentially causing damage.
- Remove the spark plug.

Checking the Spark Plug

Important: Do not clean the spark plug(s). Always replace the spark plug(s) when it has a black coating, worn electrodes, an oily film, or cracks.

If you see light brown or gray on the insulator, the engine is operating properly. A black coating on the insulator usually means the air cleaner is dirty.

Set the gap to 0.75 mm (0.03 inch).

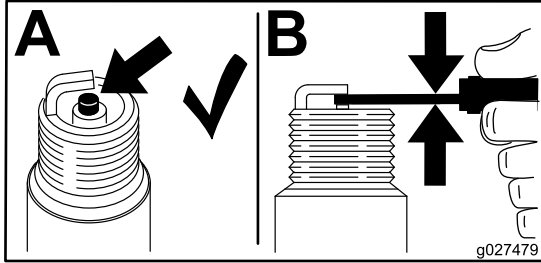


Figure 30

g027479

Installing the Spark Plug

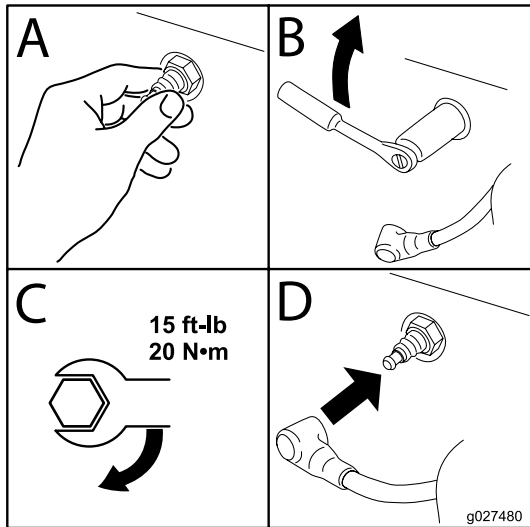


Figure 31

g027480

Belt Maintenance

Checking and Adjusting the Drive Belts

Service Interval: Every 10 hours

Yearly

The belt tension may decrease over time. You may need to adjust the belt within the first half hour of operation due to initial belt stretch.

Important: Check the belt tension regularly. Improper belt tension may cause premature belt wear.

The belt may need adjustment if there is a constant squealing sound while the tines are engaged or if the belt slips and the wheels and tines do not turn.

Checking and Adjusting the Forward Drive Belt Tension

1. With the forward drive-control lever in the neutral position, measure the length of the spring on the forward drive cable.
2. Pull down the forward lever and measure the length of the extended spring. The difference should be 5 mm (3/16 inch).

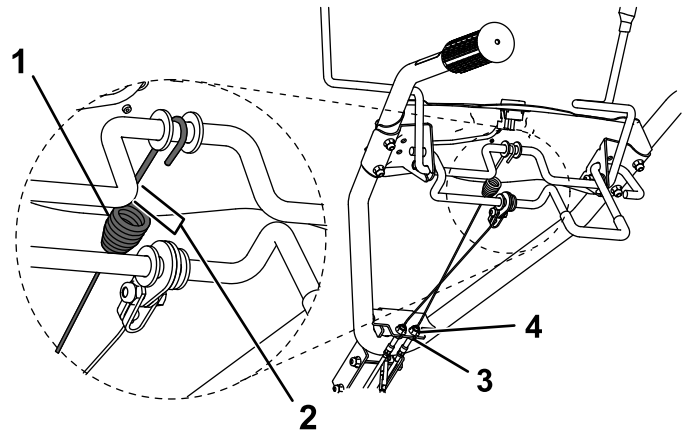


Figure 32

g357813

1. Spring on forward drive cable
2. Stretch difference of 5 mm (3/16 inch)
3. Lower jam nut
4. Upper jam nut

3. If the belt needs adjustment, loosen the upper jam nut, then tighten the lower jam nut in 0.32 cm (1/8 inch) increments. Check the tension again, and repeat as necessary

Note: If the tension is incorrect and you cannot adjust the jam nuts further, replace the belt.

Adjusting the Reverse Drive Belt Tension

If the machine does not operate in reverse when the reverse drive-control lever is engaged, adjust the jam nuts on the reverse drive cable 1 turn at a time until the reverse drive control functions properly.

Note: If the machine does not operate in reverse and you cannot adjust the jam nuts further, replace the belt.

Replacing the Belts

Service Interval: Every 50 hours

Removing the Belts

1. Park the machine on a level surface, shut off the engine, and wait for all moving parts to stop before leaving the operating position.
2. Remove the spark plug wire.
3. Shift the drive-mode lever to the NEUTRAL position.
4. Remove the wheels, upper pulley shrouds, and lower pulley guards.

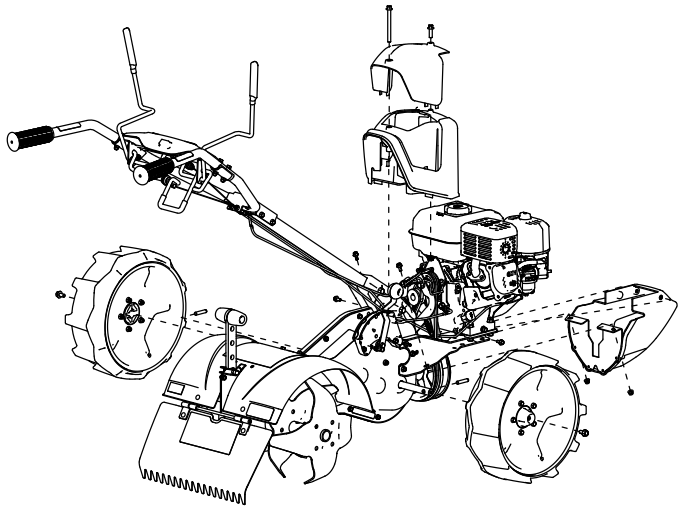


Figure 33

g357906

5. Detach the forward and reverse drive cables from the drive control levers.

6. Pull the reverse arm away from the engine pulley. Use 2 wrenches (13 mm) to loosen the idler pulley on the arm so that you can remove the reverse drive belt.

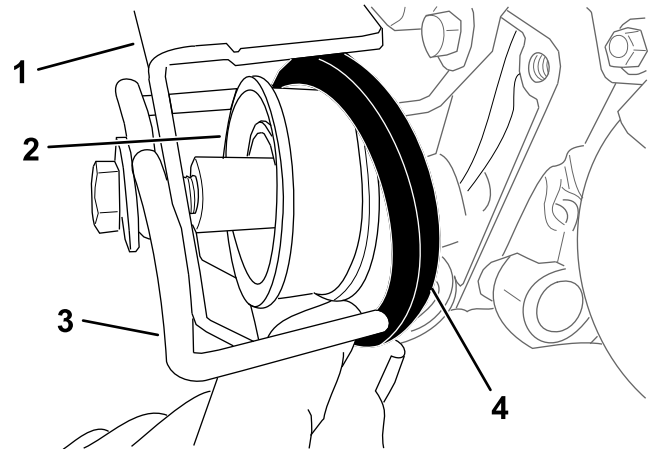


Figure 34

g356686

1. Reverse arm
2. Idler pulley
3. Wire belt guide
4. Reverse drive belt

7. Gently rotate the transmission pulley and force the forward drive belt out of the groove and away from the pulley.

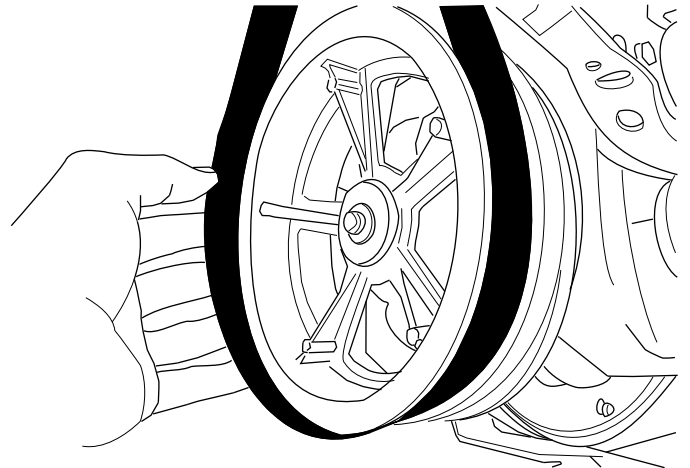


Figure 35

g356685

8. Push up on the belt, and pull it off and away from the pulley.

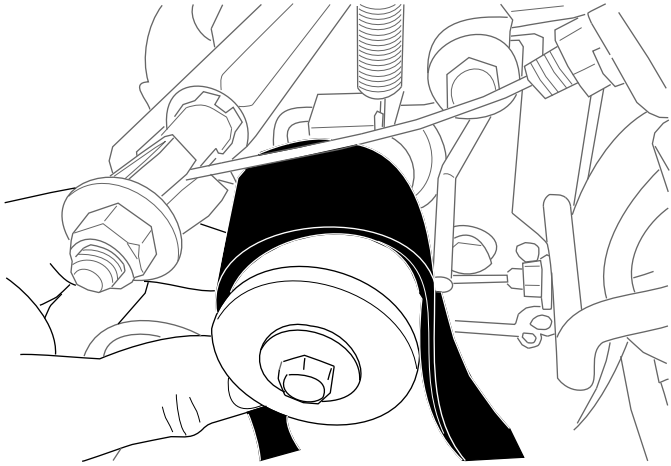


Figure 36

g356684

9. Remove the reverse drive belt from the transmission pulley.

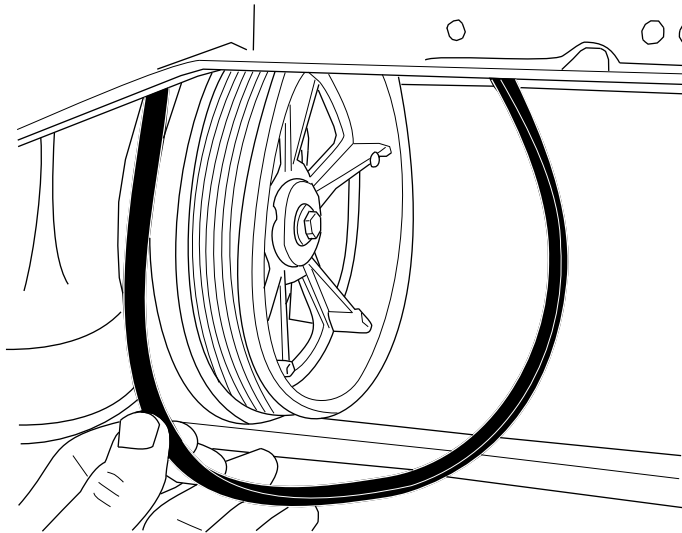


Figure 37

g356683

Installing the Belts

1. Place the reverse drive belt in the transmission pulley groove.

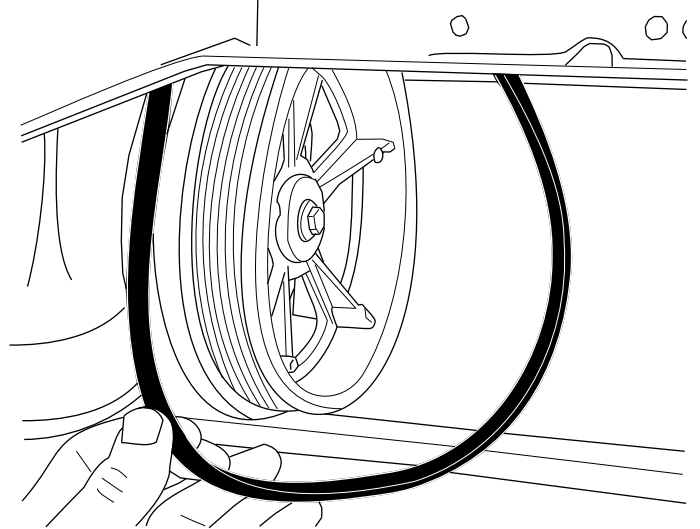


Figure 38

g356683

2. Place the forward drive belt in the engine pulley groove, between the wire guides.

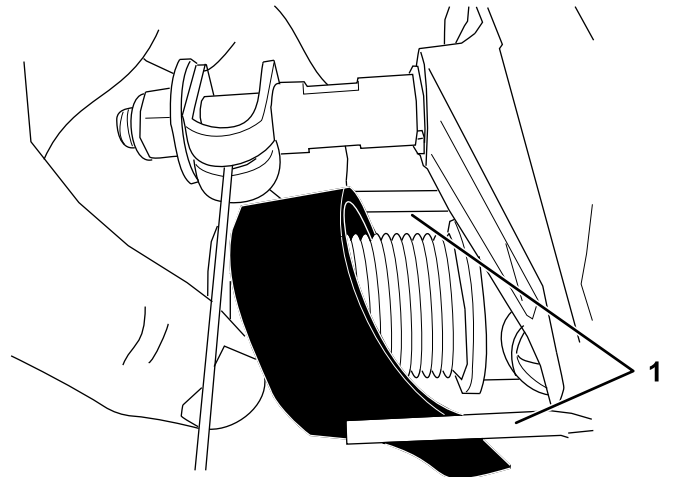


Figure 39

g356682

1. Wire guide

3. Gently rotate the transmission pulley and force the forward drive belt into the groove.

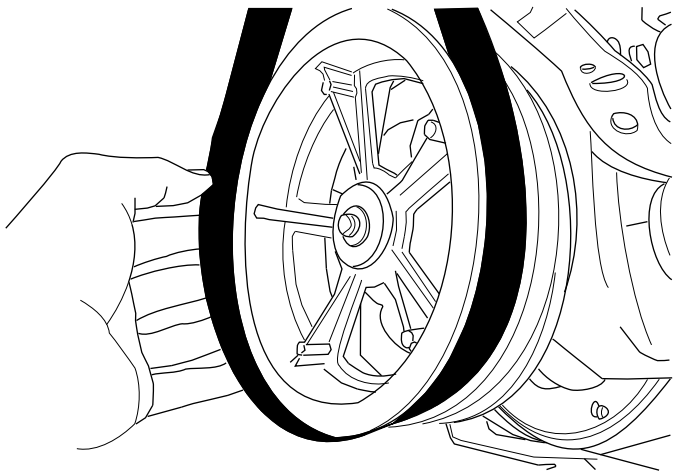


Figure 40

g356685

7. Install the upper shrouds and lower pulley guards.

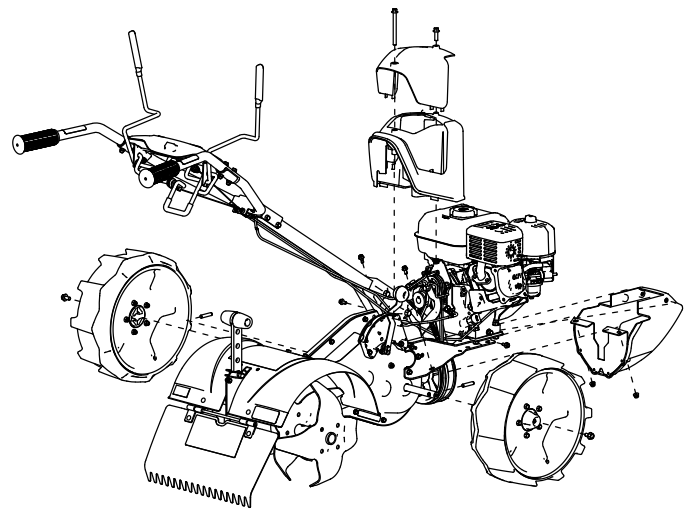


Figure 42

g357906

4. Slide the reverse drive belt onto the reverse arm idler pulley, between the wire belt guides, and into the groove.

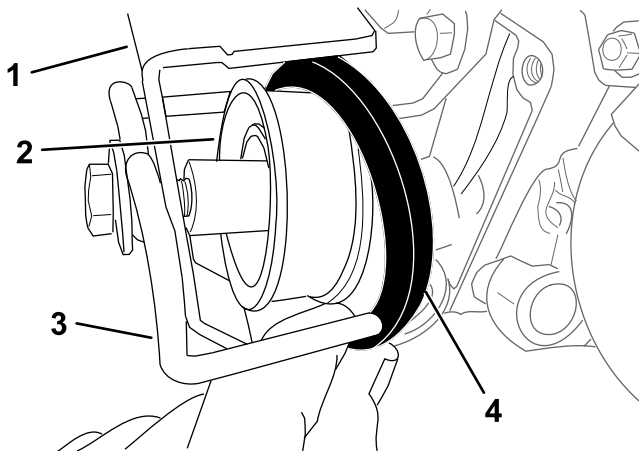


Figure 41

g356686

- | | |
|-----------------|-----------------------|
| 1. Reverse arm | 3. Wire belt guide |
| 2. Idler pulley | 4. Reverse drive belt |

5. Tighten the idler pulley so that the wire belt guides do not contact the belt when the reverse drive lever is engaged.
6. Connect the forward and reverse drive cables to the drive control levers.

8. Install the wheels.
9. Install the spark plug wire.

Cleaning

Cleaning the Machine

Before each use or daily

1. Tip the tiller toward the engine and block it into position so that it rests on the lower pulley guard and the tines are exposed.
2. Remove all debris on the axle between the tines and transmission housing.

Note: To assist cleaning, remove the tines; loosen and remove the bolt and nut on the tine shaft and slide the tines off the shaft.

3. Tip the tiller to a level position.
4. Remove all debris on the axles between the wheels and transmission housing.

To assist cleaning, remove the wheels as follows:

- A. Raise the machine so that the wheels do not support the weight of the machine.
- B. Loosen the bolt on the wheel shaft.
- C. Slide the wheels off, ensuring to not lose the wheel pin on the shaft.

Note: If the wheels are difficult to remove, thread a bolt (M10 x 25 mm, or longer) into the wheel hub and rotate it clockwise until the wheel releases from the shaft.

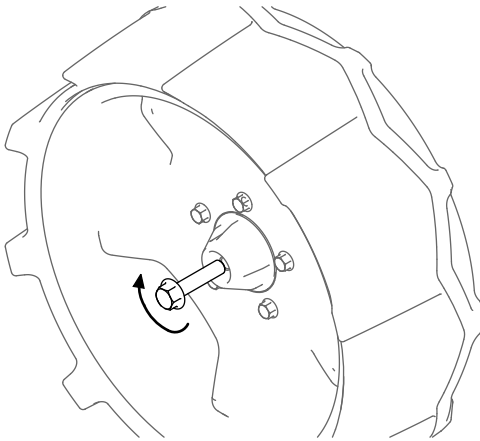


Figure 43

g360526

-
5. Tip the tiller to a level position.

Storage

Storage Safety

- Shut off the machine and wait for all moving parts to stop before you leave the operator's position. Disconnect the spark-plug wire, keep it away from the plug to prevent accidental starting, and allow the machine to cool before adjusting, fueling, unclogging, servicing, cleaning, or storing the machine.
- Run the engine dry or remove the fuel with a hand pump; never siphon the fuel. If you must drain the fuel tank, do it outdoors.
- Follow the instructions in this *Operator's Manual* to safely unload, transport, and store the machine.
- Do not store the machine with fuel in the fuel tank inside a building where ignition sources are present, such as hot water and space heaters and clothes dryers. Allow the engine to cool before storing the machine in an enclosure.
- Always refer to the *Operator's Manual* for important details if the machine is to be stored for an extended period.

Storing the Machine

1. Park the machine on a level surface, shut off the engine, and wait for all moving parts to stop before leaving the operating position.
2. Remove debris from the tines, axle, transmission housing, and engine; refer to [Cleaning the Machine \(page 26\)](#).

Important: You can wash the machine with mild detergent and water. Do not pressure-wash the machine. Avoid excessive use of water, especially near the engine and transmission.

3. Coat the axles lightly with axle grease.
4. Service the air filter; refer to [Servicing the Air Cleaner \(page 19\)](#).
5. Change the engine oil; refer to [Servicing the Engine Oil \(page 20\)](#).
6. Prepare the machine for storage for over 30 days as follows:
 - A. Add fuel stabilizer/conditioner to fresh fuel in the tank. Follow mixing instructions from the fuel stabilizer manufacturer. Do not use an alcohol-based stabilizer (ethanol or methanol).
 - B. Run the engine to distribute conditioned fuel through the fuel system for 5 minutes.
 - C. Shut off the engine, allow it to cool, and drain the fuel tank.

- D. Start the engine and run it until it shuts off.
- E. Dispose of fuel properly. Recycle the fuel according to local codes.

***Important:* Do not store fuel containing stabilizer/conditioner longer than the duration recommended by the fuel-stabilizer manufacturer.**

- 7. Remove and check the condition of the spark plug; refer to [Servicing the Spark Plug \(page 21\)](#). With the spark plug removed from the engine, pour 15 ml (1 tablespoon) of engine oil into the spark plug hole. Install the spark plug and pull the recoil rope 3 times to coat the cylinder with oil. Do not install the wire on the spark plug.
- 8. Check and tighten all fasteners. Repair or replace any part that is damaged.
- 9. Paint all scratched or bare metal surfaces. Paint is available from your Authorized Service Dealer.
- 10. Store the machine in an upright position in a clean, dry garage or storage area. Keep it out of reach of children or other unauthorized users. Cover the machine to protect it and keep it clean.

Troubleshooting

Problem	Possible Cause	Corrective Action
The engine does not start.	<ol style="list-style-type: none"> 1. The fuel tank is empty. 2. The spark-plug wire is loose or disconnected. 3. The engine switch is in the OFF position. 4. The choke lever is not in the CHOKE position during cold start. 	<ol style="list-style-type: none"> 1. Add fuel. 2. Install the wire on the spark plug. 3. Move the switch to the ON position. 4. Move the choke lever to the CHOKE position.
The engine runs rough or floods during operation.	<ol style="list-style-type: none"> 1. The air filter is dirty. 	<ol style="list-style-type: none"> 1. Clean or replace the air filter.
The engine is difficult to start.	<ol style="list-style-type: none"> 1. Stale fuel is in the fuel system. 2. The spark-plug wire is loose or disconnected. 3. A drive-control lever is engaged. 	<ol style="list-style-type: none"> 1. Drain the fuel tank and add fresh fuel. 2. Install the wire on the spark plug. 3. Release the levers.
The engine misses or lacks power.	<ol style="list-style-type: none"> 1. The tilling depth is too deep. 2. Dirt, water, or stale fuel is in fuel system. 3. The air cleaner is dirty or damaged. 4. The carburetor is out of adjustment. 5. The spark plug is wet, pitted, fouled, or the gap is incorrect. 6. Stale fuel is in the fuel system. 	<ol style="list-style-type: none"> 1. Raise the drag stake. 2. Remove and clean the fuel tank. 3. Clean or replace the air-cleaner element. 4. Contact an Authorized Service Dealer 5. Install a new, correctly gapped spark plug. 6. Drain the fuel tank and add fresh fuel.
The tiller moves forward or backward during starting.	<ol style="list-style-type: none"> 1. A drive-control lever is engaged. 2. The transmission is not set to the NEUTRAL position. 	<ol style="list-style-type: none"> 1. Release the levers. 2. Set the transmission to the NEUTRAL position.
The tiller is difficult to control when tilling; the machine jumps or lurches forward.	<ol style="list-style-type: none"> 1. The tines are tilling too deep. 2. The dirt is too compact. 	<ol style="list-style-type: none"> 1. Lower the drag stake to raise the tines. 2. Shift to CRT mode.
The tines and wheels turn, but the machine does not move.	<ol style="list-style-type: none"> 1. The tines are tilling too deep. 2. The wheels do not have traction. 3. CRT mode is selected. 	<ol style="list-style-type: none"> 1. Lower the drag stake to raise the tines. 2. Slightly lift the handlebars to allow the wheels to gain traction. 3. Shift to SRT mode.
The belts squeal when the tines are not engaged.	<ol style="list-style-type: none"> 1. The belt tension is incorrect. 2. The belt guides have incorrect placement. 	<ol style="list-style-type: none"> 1. Check the belt tension and adjust it as necessary. 2. Adjust the belt guides.
Excessive heat builds up in the transmission/tine area during tilling.	<ol style="list-style-type: none"> 1. Vegetation or debris is caught in the tines. 	<ol style="list-style-type: none"> 1. Clean the tine shaft.
The wheels cannot be removed from the shaft.	<ol style="list-style-type: none"> 1. Debris is caught in the wheel shaft. 	<ol style="list-style-type: none"> 1. Clean the wheel shaft.

Notes:

Notes:

Notes:

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.