



Count on it.

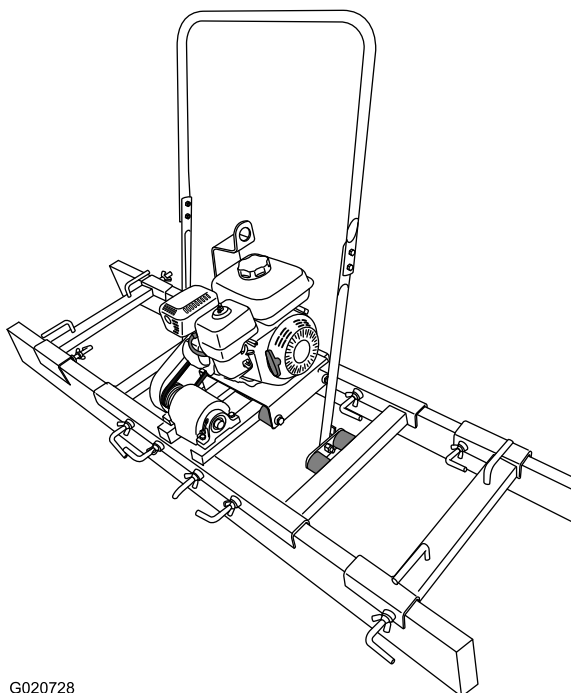
Form No. 3382-989 Rev A

Operator's Manual

VS-400 and VS-800 Screed

Model No. 68052—Serial No. 314000001 and Up

Model No. 68053—Serial No. 314000001 and Up



G020728



⚠ WARNING

CALIFORNIA Proposition 65 Warning

This product contains a chemical or chemicals known to the State of California to cause cancer, birth defects, or reproductive harm.

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

Important: This engine is not equipped with a spark arrester muffler. It is a violation of California Public Resource Code Section 4442 to use or operate the engine on any forest-covered, brush-covered, or grass-covered land. Other states or federal areas may have similar laws.

This spark ignition system complies with Canadian ICES-002.

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.

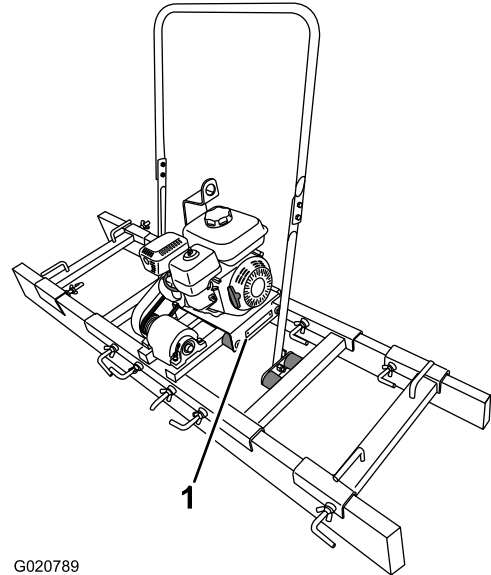
Introduction

This machine is a vibrating concrete screed intended for use in various concrete-forming work. The machine is designed to operate with a variety of operator-provided board widths including contoured screed boards.

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 machine properly and safely.

You may contact Toro directly at www.Toro.com for product and 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.



G020789

Figure 1

1. Model and serial number location

Model No. _____

Serial No. _____

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

1. Safety alert symbol


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

Improper use or maintenance by the operator or owner 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 the instruction may result in personal injury or death.

Safe Operating Practices

WARNING

Engine exhaust contains carbon monoxide, an odorless, deadly poison that can kill you.

Do not run the engine indoors or in an enclosed area.

Training

- Read the *Operator's Manual* and other training material. If the operator(s) or mechanic(s) cannot read English, it is the owner's responsibility to explain this material to them.
- Become familiar with the safe operation of the machine, operator controls, and safety signs.
- All operators and mechanics should be trained. The owner is responsible for training the users.
- Never let children or untrained people operate or service the machine. Local regulations may restrict the age of the operator.
- The owner/user can prevent and is responsible for accidents or injuries occurring to himself or herself, other people or property.

Preparation

- Wear appropriate clothing including hard hat, safety glasses, long pants, safety shoes, and hearing protection. Long hair, loose clothing or jewelry may get tangled in moving parts.
- Use extra care when handling gasoline and other fuels. They are flammable and vapors are explosive.
 - Use only an approved-fuel container.
 - Never remove the fuel-tank cap or add fuel with the engine running.
 - Allow the engine to cool before fueling.
 - Do not smoke while fueling.
 - Never refuel or drain the machine indoors.
- Check that the switches, engine controls, and shields are attached and functioning properly. Do not operate unless they are functioning properly.

Operation

- Never run an engine in an enclosed area.
- Only operate the machine in good light.
- Only start the engine from the operator's position.
- Never operate with the guards not securely in place.
- Do not change the engine governor setting or overspeed the engine.
- Stop on level ground and shut off the engine before leaving the operator's position for any reason.
- Keep pets and bystanders away while operating the machine.
- Do not operate the machine under the influence of alcohol or drugs.
- Use care when loading or unloading the machine into a trailer or truck.
- Move the engine controls in a smooth, steady motion.
- Watch for traffic when operating on or near roadways.
- Do not touch parts which may be hot from operation. Allow them to cool before attempting to maintain, adjust, or service.
- Ensure that you operate the machine in areas where there are no obstacles in close proximity to the operator. Only operate the unit in areas where there is sufficient clearance for the operator to safely maneuver the product.
- Do not place your feet under the machine or screed boards.
- Lightning can cause severe injury or death. If lightning is seen or thunder is heard in the area, do not operate the machine; seek shelter.

Maintenance and Storage

- Stop the engine and wait for all movement to stop before adjusting, cleaning, or repairing the machine.
- Clean debris from the muffler and engine to help prevent fires. Clean up oil or fuel spillage.
- Let the engine cool before storing the machine, and do not store it near an open flame.
- Do not store fuel near flames or drain fuel from the machine indoors.
- Never allow untrained personnel to service the machine.
- Use jack stands to support machine when required.
- Keep hands and feet away from moving parts. If possible, do not make adjustments with the engine running.
- Keep all parts in good working condition. Replace all worn or damaged decals.
- Keep all hardware of the machine tight. Keep the machine in good condition.
- Never tamper with safety devices.
- When present, clean up oil or fuel spillage.
- Use extra care when handling gasoline and other fuels. They are flammable and vapors are explosive.
 - Store fuel in an approved container.
 - Do not remove the gas cap or add fuel while the engine is running.
 - Allow the engine to cool before fueling the machine.
 - Do not smoke while fueling the machine.
 - Do not fuel the machine indoors.
 - Do not store the machine or fuel container inside where there is an open flame, such as near a water heater or furnace.
 - Do not fill a container while it is inside a vehicle, trunk, pick-up bed, or any surface other than the ground.
 - Keep container nozzle in contact with the tank during filling.
- Make any necessary repairs to the machine before starting.
- Use only genuine Toro replacement parts to ensure that original standards are maintained.

Safety and Instructional Decals

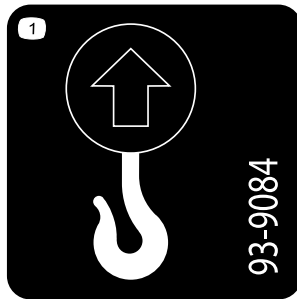


Safety decals and instructions are easily visible to the operator and are located near any area of potential danger. Replace any decal that is damaged or lost.



125-8203

1. Read the *Operator's Manual* for information on starting the engine—1) Turn on the engine switch; 2) Close the choke and turn on the fuel switch; 3) Pull the recoil starter; 4) Open the choke.
2. Read the *Operator's Manual* for information on stopping the engine—1) Turn off the engine switch; 2) Turn off the fuel switch.
3. Warning—read the *Operator's Manual*; wear hearing protection.
4. Warning—keep away from moving parts; keep all guards and shields in place.
5. Warning—keep bystanders away.
6. Choking hazard—do not run the engine in an unventilated area.
7. Explosion hazard—stop the engine and extinguish all flames before refueling.

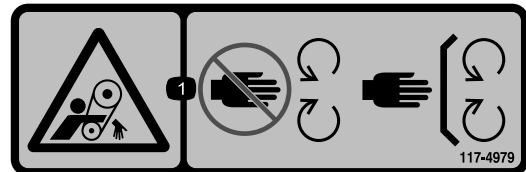


93-9084

1. Lift point

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. 117-2718

117-2718



117-4979

1. Rotating belt — Keep guard in place

Setup

1

Installing the Handlebar

Parts needed for this procedure:

1	Upper handlebar
4	Bolt (5/16 x 1 inch)
4	Nut (5/16 inch)

Procedure

Place the upper handlebar so that it can be installed using the nuts and bolts. (Figure 3).

Note: Ensure that the decal is in the correct position so it can be read by the operator while in the operators position; refer to Figure 11.

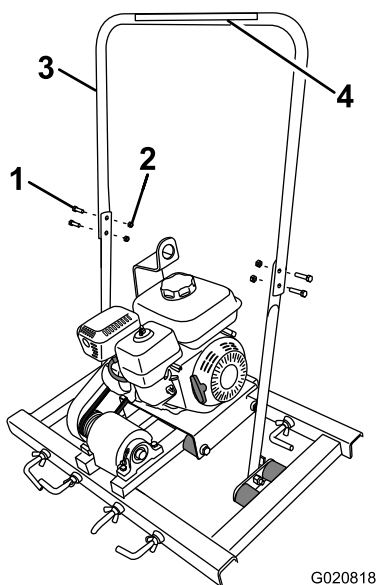


Figure 3

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- | | |
|---------|--------------------|
| 1. Bolt | 3. Upper handlebar |
| 2. Nut | 4. Decal |

2

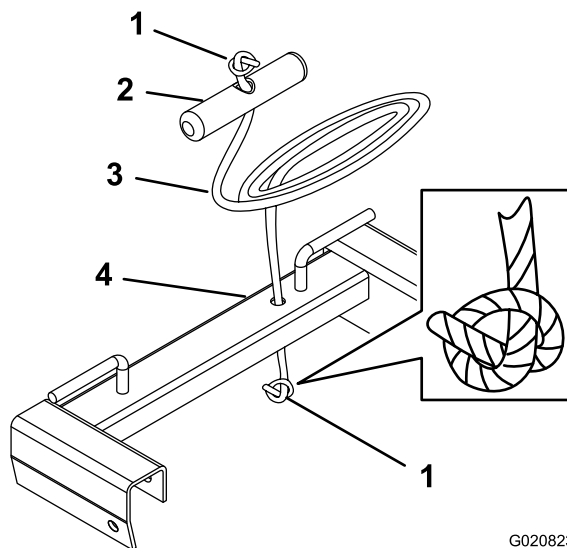
Installing the Tow Rope

Parts needed for this procedure:

1	Left spreader
1	Right spreader
2	Pull grip
2	Rope

Procedure

1. Thread the end of the rope through a pull grip (Figure 4).



G020823

Figure 4

- | | |
|------------------|---------------------|
| 1. Pull grip | 3. Rope |
| 2. Overhand knot | 4. Spreader (right) |

2. Tie an overhand knot in the free end of the rope (Figure 4).
3. Thread the free end of the rope through the hole in the right spreader (Figure 4).
4. Tie an overhand knot in the short end of the rope.
5. Repeat steps 1 and 2 with the other segment of rope and pull grip.
6. Thread the long end of the rope through the hole in the left spreader.
7. Tie an overhand knot in the free end of the rope.

3

Installing the L-bolts

Parts needed for this procedure:

10	L-bolt
10	Wingnut

Assembling the L-bolts to the Machine and Spreaders

1. If not installed, thread the wingnuts onto the L-bolt (Figure 5).

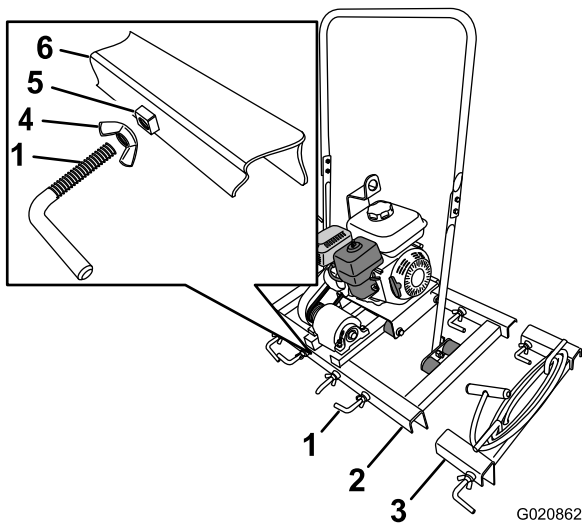


Figure 5

- | | |
|-----------------------|------------|
| 1. L-bolt | 4. Wingnut |
| 2. Channel (frame) | 5. Weldnut |
| 3. Channel (spreader) | 6. Channel |

2. Thread the L-bolts 2 or 3 rotations into the weldnuts in the U-channels of the frame and the spreaders (Figure 5).

4

Checking the Oil Level

No Parts Required

Procedure

Before starting the engine for the first time, check the engine oil level; refer to Checking the Engine Oil Level (page 12).

Product Overview

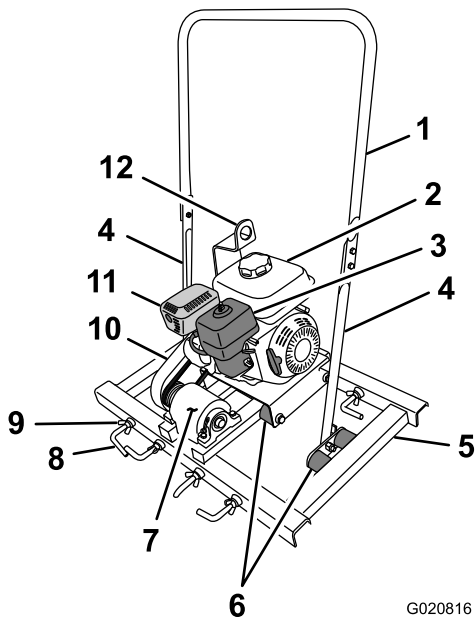


Figure 6

- | | |
|-----------------------|---------------------|
| 1. Upper handlebar | 7. Eccentric guard |
| 2. Fuel tank | 8. L-bolt |
| 3. Air-filter housing | 9. Wingnut |
| 4. Lower handlebar | 10. Belt guard |
| 5. Frame | 11. Muffler |
| 6. Isolator | 12. Lifting bracket |

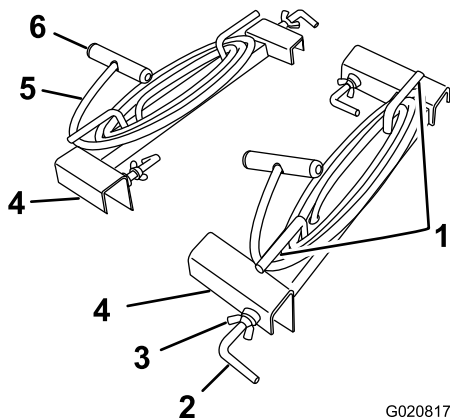


Figure 7

- | | |
|------------|-----------------------|
| 1. Cleat | 4. Channel (spreader) |
| 2. L-bolt | 5. Rope |
| 3. Wingnut | 6. Pull grip |

Controls

Become familiar with all the engine controls before you start and operate the machine.

Engine Controls

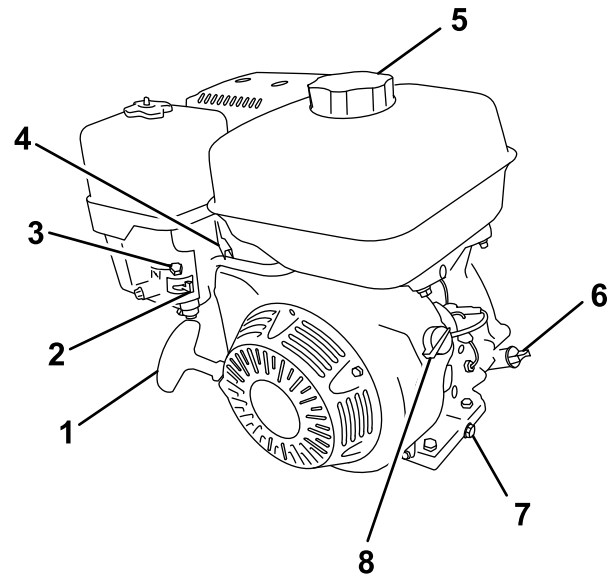


Figure 8

- | | |
|------------------------|---------------------|
| 1. Recoil-start handle | 5. Fuel cap |
| 2. Fuel valve | 6. Oil cap/dipstick |
| 3. Choke lever | 7. Oil-drain plug |
| 4. Throttle lever | 8. On/Off switch |

Fuel Valve

The fuel valve (Figure 9) is located underneath the choke lever. Move the lever for the fuel valve to the On position before attempting to start the engine. When you have finished screeding, stop the engine and move the fuel valve lever to the Off position.

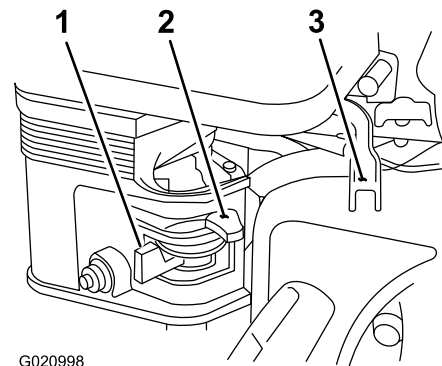


Figure 9

- | | |
|----------------|-------------------|
| 1. Fuel valve | 3. Throttle lever |
| 2. Choke lever | |

Choke Lever

The choke lever (Figure 9) is required when starting a cold engine. Before pulling on the recoil-start handle, move the choke lever to the closed position. Once the engine is running, move the choke lever to the open position. Do not use the choke if the engine is already warmed up or the air temperature is high.

Throttle Lever

The throttle lever (Figure 9) controls the speed (rpm) of the engine. It is located next to the choke lever.

Recoil-start Handle

To start the engine, pull the recoil-start handle (Figure 8) quickly to turn the engine over. The engine controls described above must all be set correctly for the engine to start.

Oil-level Switch

The oil-level switch is located inside the engine, and it will not allow the engine to run when oil level is below the safe operating limit.

Engine On/Off Switch

The On/Off switch (Figure 10) allows the operator of the machine to start and stop the engine. This switch is located on the front of the engine. It is marked I (On) and O (Off). Rotate the On/Off switch to the On position to start and run the engine. Rotate the On/Off switch to the Off position to stop the engine.

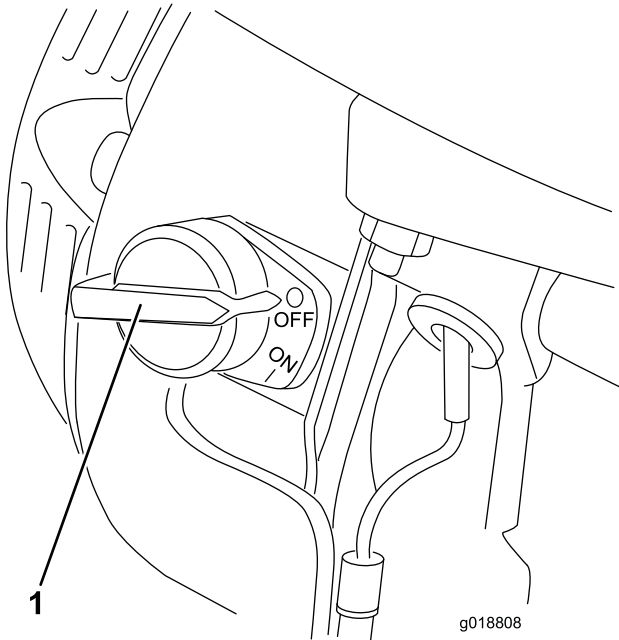


Figure 10

1. Engine On/Off switch

Specifications

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

	Model 68052	Model 68053
Width (without spreaders and screed board)	89 cm (35 inch)	89 cm (35 inch)
Length	56 cm (22 inch)	56 cm (22 inch)
Height (without screed board)	122 cm (48 inch)	122 cm (48 inch)
Weight (without screed board)	53 kg (116 lb)	61 kg (134 lb)
Screed board thickness and height	5 cm x 15–20 cm (2 inch x 6–8 inch)	5 cm x 15–20 cm (2 inch x 6–8 inch)
Maximum screed board width	457 cm (15 ft)	914 cm (30 ft)

Operation

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

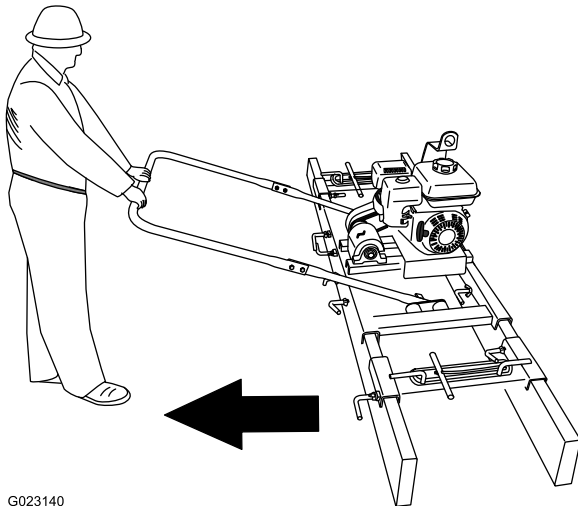
Important: Before operating the machine, check the fuel and oil levels, and remove debris from the machine.

Preparing to Use the Machine

- Review all of the safety decals on the machine.
- Use a hard hat, hearing protection, tight-fitting gloves without drawstrings or loose cuffs, and eye protection. A mesh visor alone does not provide sufficient eye protection; supplement with protective glasses.
- Ensure that you are familiar with safety regulations and the shutdown procedures described in the *Operator's Manual* and the *Engine Manual*.
- Ensure that all guards are in place and in good condition.
- Ensure that the screed boards are in good condition, aligned correctly and secure to the machine and spreaders.
- Check the fuel and oil levels of the engine.

Operator Position

You must be familiar with the operating position when using the machine (Figure 11).



G023140

Figure 11

and/or engine damage which may not be covered under warranty.

- **Do not** use gasoline containing methanol.
- **Do not** store fuel either in the fuel tank or fuel containers over the winter unless a fuel stabilizer is used.
- **Do not** add oil to gasoline.

DANGER

In certain conditions, gasoline is extremely flammable and highly explosive. A fire or explosion from gasoline can burn you and others and can damage property.

- **Fill the fuel tank outdoors, in an open area, when the engine is cold. Wipe up any gasoline that spills.**
- **Never fill the fuel tank inside an enclosed trailer.**
- **Do not fill the fuel tank completely full. Add gasoline to the fuel tank until the level is no higher than the screen on the filter in the fuel tank. This empty space in the tank allows gasoline to expand.**
- **Never smoke when handling gasoline, and stay away from an open flame or where gasoline fumes may be ignited by a spark.**
- **Store gasoline in an approved container and keep it out of the reach of children. Never buy more than a 30-day supply of gasoline.**
- **Do not operate the machine without entire exhaust system in place and in proper working condition.**

Adding Fuel

ETHANOL: Gasoline with up to 10% ethanol (gasohol) or 15% MTBE (methyl tertiary butyl ether) by volume is acceptable. Ethanol and MTBE are not the same. Gasoline with 15% ethanol (E15) by volume is not approved for use.

Never use gasoline that contains more than 10% ethanol by volume, such as E15 (contains 15% ethanol), E20 (contains 20% ethanol), or E85 (contains up to 85% ethanol). Using unapproved gasoline may cause performance problems

⚠ DANGER

In certain conditions during fueling, static electricity can be released causing a spark which can ignite the gasoline vapors. A fire or explosion from gasoline can burn you and others and can damage property.

- Always place the gasoline containers on the ground away from your vehicle before filling.
- Do not fill gasoline containers inside a vehicle or on a truck or trailer bed because interior carpets or plastic truck bed liners may insulate the container and slow the loss of any static charge.
- When practical, remove gas-powered equipment from the truck or trailer and refuel the machine on the ground.
- If this is not possible, then refuel such equipment on a truck or trailer from a portable container, rather than from a gasoline dispenser nozzle.
- If a gasoline dispenser nozzle must be used, keep the nozzle in contact with the rim of the fuel tank or container opening at all times until fueling is complete.

⚠ WARNING

Gasoline is harmful or fatal if swallowed. Long-term exposure to vapors can cause serious injury and illness.

- Avoid prolonged breathing of vapors.
- Keep face away from nozzle and gas tank or fuel-container opening.
- Keep gas away from eyes and skin.

Important: Do not mix oil with the fuel.

Recommended Fuel

Unleaded Gasoline	
U.S.	Pump octane rating 87 or higher
Except U.S.	Research octane rating 92 or higher Pump octane rating 87 or higher

Using Fuel Stabilizer/Conditioner

Use a fuel stabilizer/conditioner in the machine to keep the fuel fresh during storage.

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

Add the correct amount of fuel stabilizer/conditioner to the fuel, and follow the directions of the manufacturer of the stabilizer.

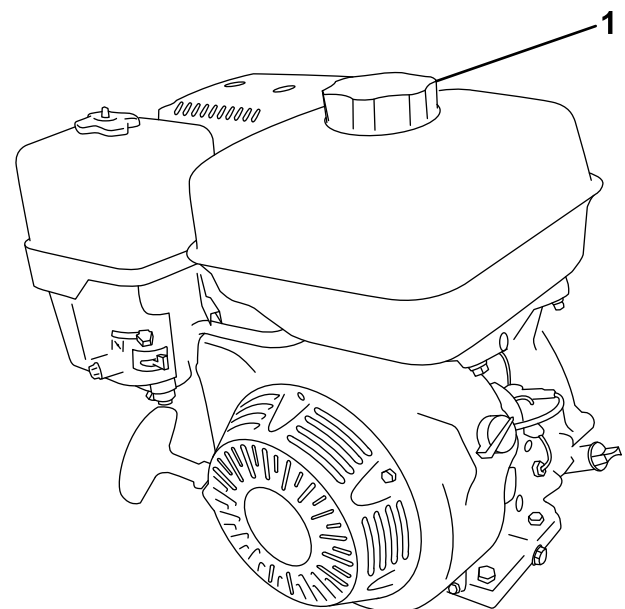
Note: Fuel stabilizer/conditioner is most effective when mixed with fresh gasoline. To minimize the chance of varnish deposits in the fuel system, use fuel stabilizer at all times.

Filling the Fuel Tank

Fuel tank capacity: 3.1 L (0.82 US gallon)

Important: The unused space in the tank allows the gasoline to expand with changes in temperature. Do not fill the fuel tank completely full.

1. Park the machine on a level surface, stop the engine, and allow the engine to cool.
2. Clean around the fuel cap and remove it (Figure 12).



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Figure 12

1. Fuel cap

3. Add unleaded gasoline to the fuel tank, until the level is at the bottom of the maximum fuel level as shown in Figure 13.

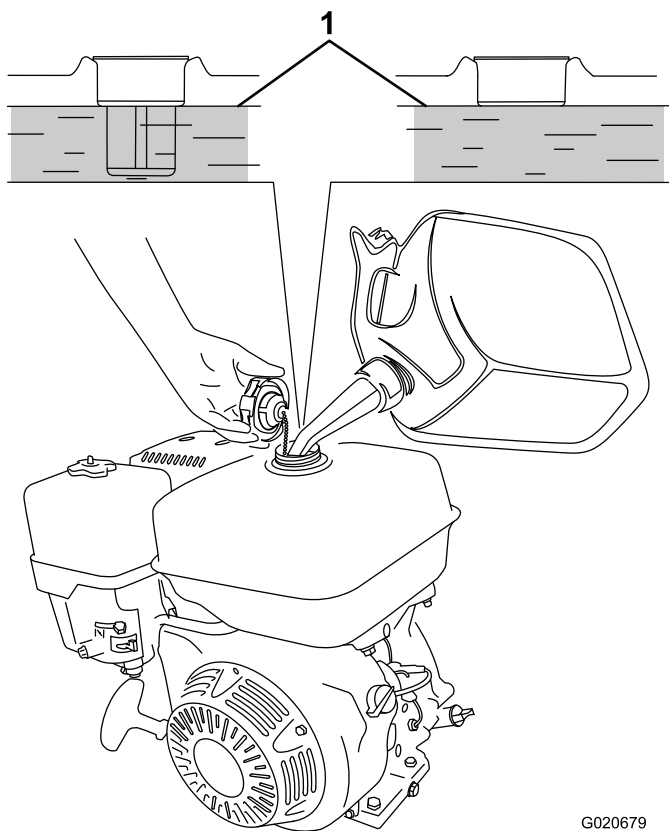


Figure 13

1. Maximum fuel level

4. Install the fuel cap securely (Figure 12).
5. Wipe up any gasoline that may have spilled.

Checking the Engine Oil Level

Service Interval: Before each use or daily

Important: Use 4-cycle motor oil that meets or exceeds the requirements for API service category *SJ* or *later* (or equivalent). Always check the API service label on the oil container to be sure it includes the *SJ* or *later* (or equivalent) rating.

Do not overfill the crankcase with oil because the engine may be damaged.

Running the engine with a low oil level can cause engine damage. This type of damage is not covered by the warranty.

Note: SAE 10W-30 is recommended for general use. The other oil viscosities shown in the chart may be used when the average temperature in your area is within the indicated range.

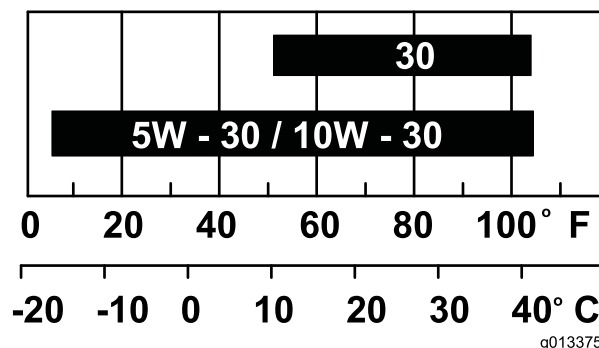


Figure 14

Note: Toro Premium Engine Oil is available from your Authorized Toro Dealer.

1. Place the machine on a flat, level surface, and stop the engine.
2. Allow the engine to cool.
3. Clean around the oil dipstick.
4. Remove the oil cap/dipstick and wipe the end clean (Figure 15).

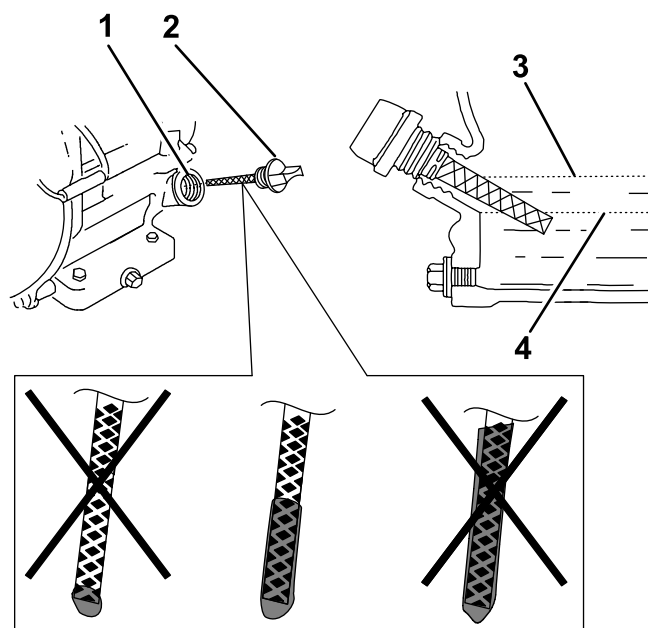


Figure 15

1. Fill port
2. Oil cap/dipstick
3. Oil level (upper limit)
4. Oil level (lower limit)

5. Slide the dipstick fully into the fill port without threading it into the port (Figure 15).
6. Remove the dipstick and look at the end. If the engine oil level is low, slowly pour only enough oil into the fill port to raise the level to the Full mark on the dipstick (Figure 15).
7. Replace and secure the dipstick (Figure 15).

Starting and Stopping the Engine

Starting the Engine

1. On the engine, move the throttle lever away from the Min position, 1/3 of the way toward the Max position (Figure 16); refer to Throttle Lever (page 9).

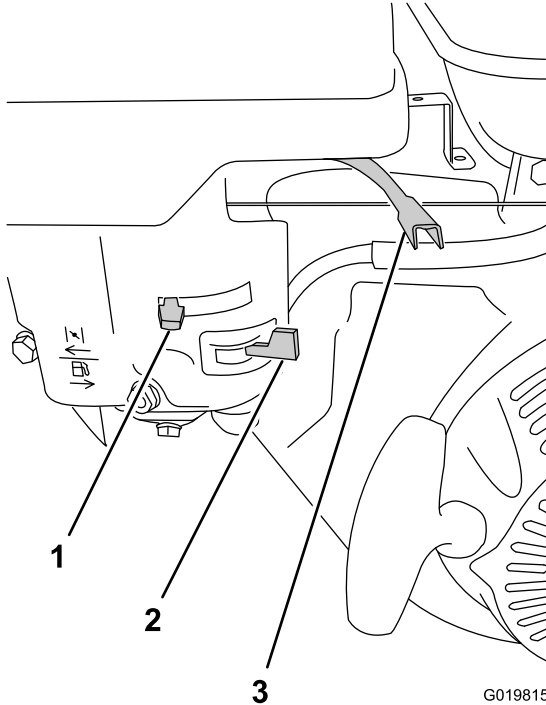


Figure 16

- | | |
|----------------|-------------------|
| 1. Choke lever | 3. Throttle lever |
| 2. Fuel valve | |

2. Move the lever of the fuel valve to the On position—all the way to the right (Figure 16); refer to Fuel Valve (page 8).
3. Position the choke lever as follows:
 - To start a cold engine, move the choke lever to the Closed position—all the way to the left (Figure 16); refer to Choke Lever (page 9).
 - To start a warm engine, move the choke lever in the Open position—all the way to the right.
4. Rotate the engine switch to the On position (Figure 16); refer to Engine On/Off Switch (page 9).
5. Pull the recoil-start handle lightly until you feel resistance, then pull the handle briskly (Figure 17).

Note: Return the recoil-start handle gently.

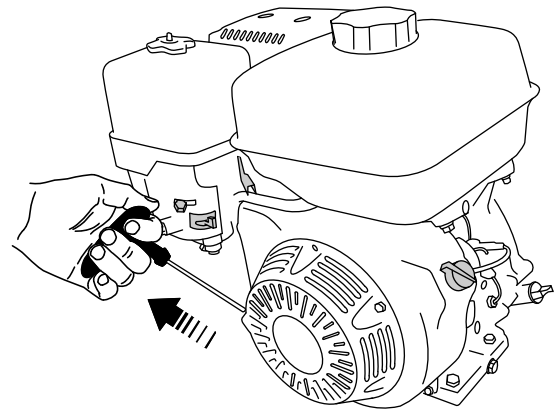


Figure 17

Note: If the choke lever is set to the Closed position to start the engine, gradually move the choke lever back toward the Open position as the engine warms up. If the engine stalls or hesitates, move the choke lever back toward the Closed position until the engine runs smooth. Allow the engine to warm up, then move the choke lever to the Open position; refer to Choke Lever (page 9).

Stopping the Engine

⚠ WARNING

In an emergency situation, stop the engine immediately.

Important: During normal operation, if the engine has been working hard or is hot, let it idle for a minute before stopping the engine. This helps to cool the engine before stopping.

1. Ensure that the choke lever is in the Off position (Figure 16); refer to Choke Lever (page 9).
2. Move the throttle lever to the Min position (Figure 16); refer to Throttle Lever (page 9).
3. Rotate the engine switch to the Off position; refer to Engine On/Off Switch (page 9).

Installing and Removing the Screed Boards

Note: Use straight 5 cm x 15 to 20 cm (2 inch x 6 to 8 inch) boards or 2-inch thick contoured material.

Maximum screed board widths:

- **Model 68052**—457 cm (15 ft)
- **Model 68053**—914 cm (30 ft)

Installing the Screed Boards to the Machine

1. Place the machine on a level, flat surface.
2. Raise the front of the machine 10 to 12 inches, and align the forward screed board to the forward U-channel of the frame (Figure 18).

Note: The front U-channel is located adjacent to the eccentric cover.

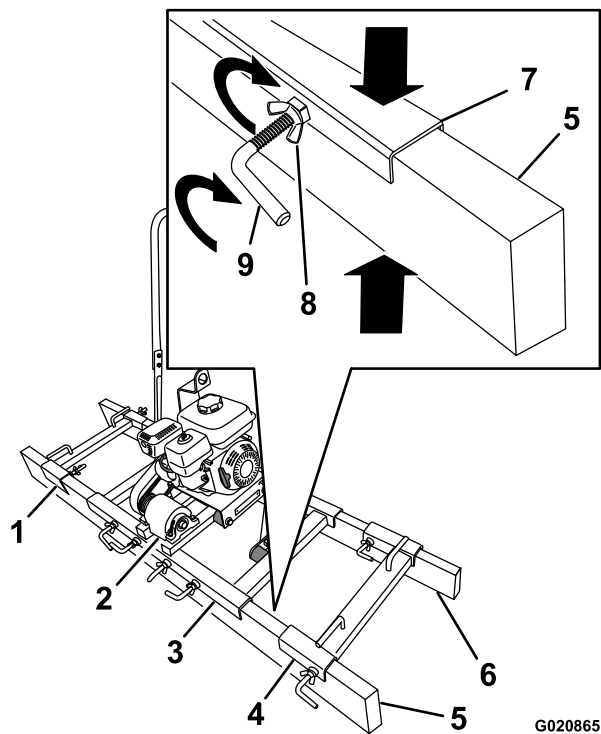


Figure 18

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- | | |
|-------------------------------|----------------------|
| 1. U-channel (right spreader) | 6. Rear screed board |
| 2. Eccentric guard | 7. U-channel |
| 3. U-channel (frame) | 8. Wing nut |
| 4. U-channel (left spreader) | 9. L-bolt |
| 5. Forward screed board | |
-
3. Align the screed board to the U-channel and center the board the machine (Figure 18).
 4. Lightly tighten the L-bolts in the forward U-channel (Figure 18).

5. Raise the rear of the machine 10 to 12 inches, and align the rear screed board to the rear U-channel of the frame (Figure 18).
6. Align the screed board to the U-channel, and center the board to the machine (Figure 18).
7. Secure the screed board to the machine by tightening all the L-bolts and wing nuts (Figure 18).

Installing the Spreaders

Spreader Position Table

Screed board length	457 cm (15 ft)	610 cm (20 ft)	762 cm (25 ft)	914 cm (30 ft)
Spreader position (from the end of the screed board)	61 cm (2 ft)	91 cm (3 ft)	122 cm (4 ft)	152 cm (5 ft)

1. Using the Spreader Position Table, locate and mark the positions of the spreaders on both ends of the screed board.
2. Align channels of the spreader to the screed boards and seat the spreader onto the boards (Figure 18).
3. Slide the spreader along the boards until the outside edge of the spreader is aligned with the mark on the board created in step 1.
4. Secure the spreader to the screed boards with the L-bolts and wing nuts (Figure 18).
5. Attach the spreader to the other end of the screed board by repeating steps 2, 3, and 4.

Removing the Spreaders and Screed Boards

1. Place the machine on a level, flat surface.
2. Loosen the wing nuts and L-bolts that secure the spreaders to the screed boards, and remove the spreaders (Figure 18).
3. Raise the rear of the machine 10 to 12 inches, and remove the rear screed board from the rear U-channel of the frame (Figure 18).
4. Loosen the wing nuts and L-bolts that secure the rear screed board to the rear U-channel of the frame, and remove the screed board (Figure 18).
5. Raise the front of the machine 10 to 12 inches, and remove the forward screed board from the forward U-channel of the frame (Figure 18).
6. Loosen the wing nuts and L-bolts that secure the forward screed board to the forward U-channel of the frame, and remove the screed board (Figure 18).
7. Carefully lower the machine.

Screeding a Concrete Surface

Leveling the Concrete Surface

This procedure levels a freshly poured concrete project to the form height.

Note: The forward screed board is located adjacent to the eccentric guard.

1. Lift and align the screed onto the end of the concrete forms with the forward screed board at the front of the screed pass.

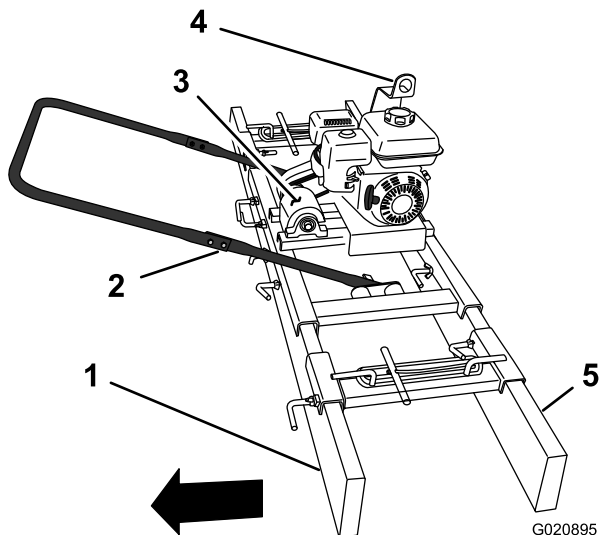


Figure 19

- | | |
|-------------------------|----------------------|
| 1. Forward screed board | 4. Lift bracket |
| 2. Handlebar | 5. Rear screed board |
| 3. Eccentric guard | |

2. Start the engine; refer to Starting the Engine (page 13).
3. Move the throttle lever to the Fast position; refer to Throttle Lever (page 9).
4. Pull the screed in slow, steady motion along the concrete forms (Figure 20).

Note: Ensure that an adequate amount of concrete is loaded ahead of the forward screed board for the entire screeding pass.

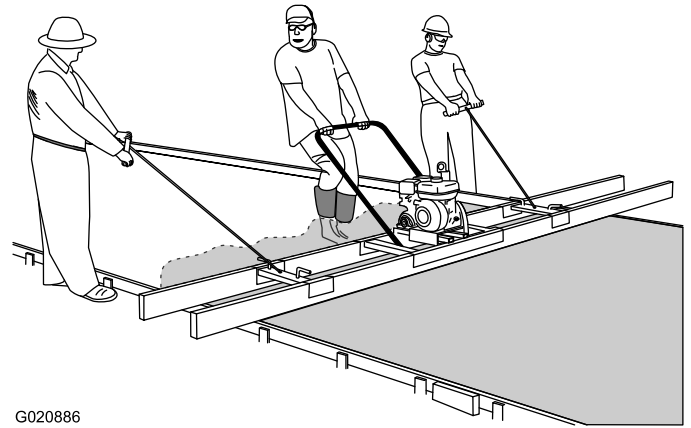


Figure 20

Note: Use additional people to move the screed by having them pull the screed with the tow grips and ropes that are attached to the spreaders (Figure 20).

5. At the end of the screed pass, move the engine throttle to the idle position and allow the engine to idle for 1 minute.
6. Stop the engine and move the screed off the forms; refer to Stopping the Engine (page 13).
7. Clean the screed of cement, sand, and aggregate after each pass with water and a soft-bristle brush.

Lifting the Machine

Moving the Machine with the Lifting Plate

Important: Use lifting equipment with a 61 kg (134 lb) or greater lift capacity.

1. Remove the spreaders and screed boards from the machine; refer to Removing the Spreaders and Screed Boards (page 14).
2. Move the lever for the fuel valve to the Off position, refer to Fuel Valve (page 8).
3. Align the hook, strap, or cable of the lifting equipment to the hole in the lifting bracket (Figure 21).

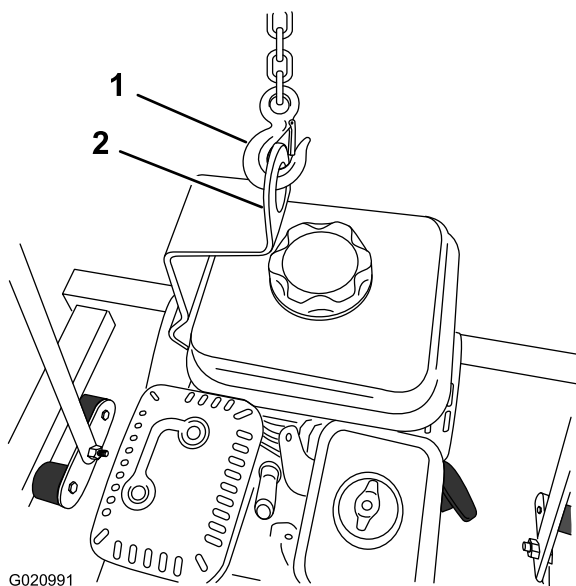


Figure 21

- | | |
|----------------------|-----------------|
| 1. Lifting equipment | 2. Lift bracket |
|----------------------|-----------------|

-
4. Raise the machine and move it to the desired location.
 5. Carefully lower the machine.
 6. Remove the lifting equipment (Figure 21).

Maintenance

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

Recommended Maintenance Schedule(s)

Maintenance Service Interval	Maintenance Procedure
After the first 25 hours	<ul style="list-style-type: none">• Inspect and adjust the belt.
After the first 50 hours	<ul style="list-style-type: none">• Change the oil.
Before each use or daily	<ul style="list-style-type: none">• Check the engine oil level.• Grease the machine.• Inspect the air cleaner elements.• Check for loose fasteners.
After each use	<ul style="list-style-type: none">• Clean the machine.
Every 25 hours	<ul style="list-style-type: none">• Change the oil when operated under heavy loads or in high temperatures.
Every 50 hours	<ul style="list-style-type: none">• Clean the air filter elements. Clean them more frequently in dusty operating conditions.
Every 100 hours	<ul style="list-style-type: none">• Change the oil.• Check the spark plug.• Clean the sediment cup.
Every 300 hours	<ul style="list-style-type: none">• Replace the paper air cleaner element. Replace it more frequently in dusty operating conditions.• Replace the spark plug.
Monthly	<ul style="list-style-type: none">• Lubricate the clutch.• Inspect and adjust the belt.
Yearly or before storage	<ul style="list-style-type: none">• Change the oil.• Clean the fuel sediment cup.• Touch up chipped paint

Important: Refer to your *Engine Operator's Manual* for additional maintenance procedures.

CAUTION

Disconnect the wires from the spark plugs before you do any maintenance. Set the wires aside so that they do not accidentally contact the spark plugs.

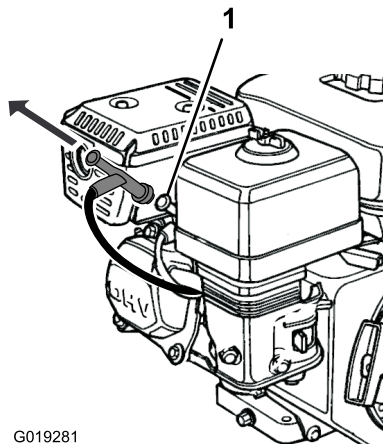
Premaintenance Procedures

Preparing the Machine for Maintenance

1. Move the machine to a level surface.
2. Ensure that the engine and muffler are cool.
3. Remove the spark plug wire, refer to Disconnecting the Spark-plug Wire (page 18).

Disconnecting the Spark-plug Wire

Pull the spark-plug wire off the terminal of the spark plug (Figure 22).



G019281

Figure 22

1. Spark plug

Lubrication

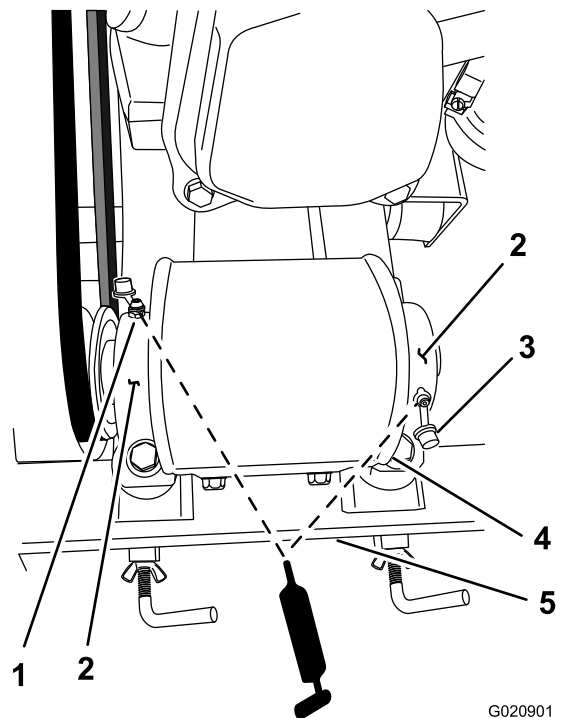
Greasing the Machine

Service Interval: Before each use or daily

Grease eccentric bearings every 8 operating hours and immediately after every washing.

Grease Type: Lithium-based grease.

1. Locate the support bearings at the left and right sides of the eccentric guard (Figure 23).



G020901

Figure 23

- | | |
|--------------------|--------------------|
| 1. Grease fitting | 4. Eccentric guard |
| 2. Support bearing | 5. Channel (frame) |
| 3. Dust cap | |

2. Open the dust caps that cover the grease fittings that in the support bearings (Figure 23).
3. Clean the grease fittings with a rag.
4. Connect a grease gun to each fitting (Figure 23).
5. Pump grease into the fittings until grease begins to ooze out of the bearings (approximately 1 or 2 pumps).
6. Wipe up any excess grease with a clean rag.
7. Close the dust caps (Figure 23).

Engine Maintenance

Servicing the Air Cleaner

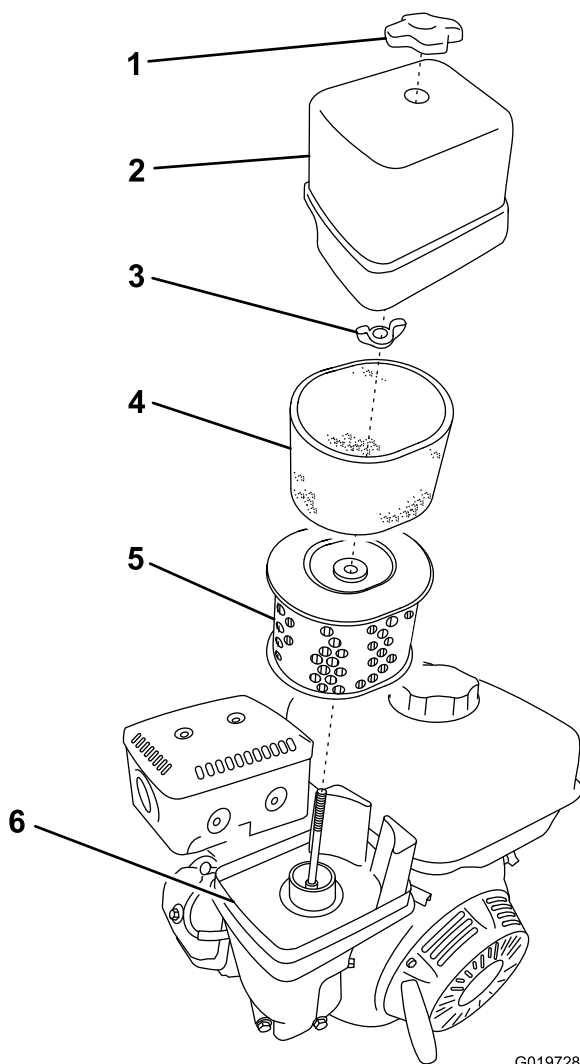
Service Interval: Before each use or daily—Inspect the air cleaner elements.

Every 50 hours—Clean the air filter elements. Clean them more frequently in dusty operating conditions.

Every 300 hours/Yearly (whichever comes first)—Replace the paper air cleaner element. Replace it more frequently in dusty operating conditions.

Important: Do not operate the engine without the air filter assembly; extreme engine damage will occur.

1. Stop the engine and wait for all moving parts to stop.
2. Disconnect the wire from the spark plug; refer to .
3. Remove the nut that secures the cover (Figure 24).



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Figure 24

- | | | |
|--------------|-----------------|------------------|
| 1. Cover nut | 3. Wing nut | 5. Paper element |
| 2. Cover | 4. Foam element | 6. Base |

Note: Be careful to prevent dirt and debris from falling into the base.

5. Remove the foam and paper elements from the base (Figure 24).
6. Remove the foam element from the paper element (Figure 24).
7. Inspect the foam and paper elements, and replace them if they are damaged or excessively dirty.
8. If the paper element is excessively dirty, replace it.

Note: Never try to brush dirt off the paper element; brushing forces the dirt into the fibers.

9. Clean the foam element in warm, soapy water or in a **nonflammable** solvent.

Note: Do not use gasoline to clean the foam element because it could create a risk of fire or explosion.

10. Rinse and dry the foam element thoroughly.
11. Dip the foam element in clean engine oil, then squeeze out the excess oil.

Note: Excess oil in the foam element restricts the air flow through the element and may reach the paper filter and clog it.

12. Wipe dirt from the base and the cover with a moist rag.

Note: Be careful to prevent dirt and debris from entering the air duct leading to the carburetor.

13. Install the air cleaner elements and ensure that they are properly positioned.
14. Securely install the cover with the nut.

4. Remove the cover.

Changing the Engine Oil

Service Interval: After the first 50 hours/Monthly (whichever comes first)—Change the oil.

Every 100 hours/Every 6 months (whichever comes first)—Change the oil.

Every 25 hours—Change the oil when operated under heavy loads or in high temperatures.

Yearly or before storage—Change the oil.

Draining the Engine Oil

1. Start the engine and let it run five minutes; refer to Starting the Engine (page 13).

Note: This warms the oil so it drains better.

2. Place a drain pan, with a 1.9 L (2 US qt) capacity or greater, under the oil-drain port of the engine (Figure 25).

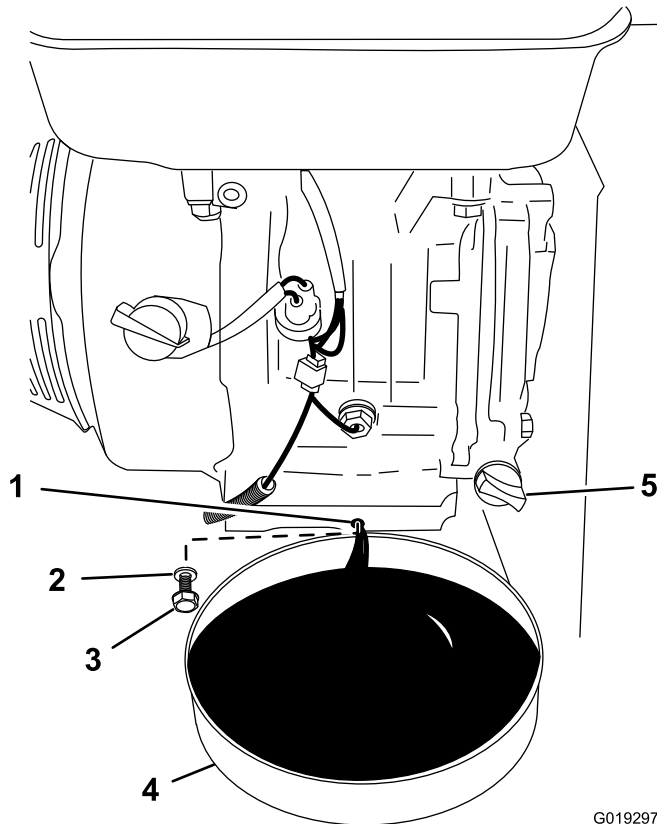


Figure 25

G019297

1. Drain port
2. Washer
3. Drain plug
4. Drain pan
5. Oil cap/dipstick

3. Remove the drain plug and washer, and drain the oil (Figure 25).
4. When the oil has drained completely, install the drain plug with a new washer, and wipe up any spilled oil (Figure 25).

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

Filling the Engine Crankcase with Oil

Important: Use 4-stroke motor oil that meets or exceeds the requirements for API service category *SJ* or *later* (or equivalent). Always check the API service label on the oil container to be sure it includes the *SJ* or *later* (or equivalent).

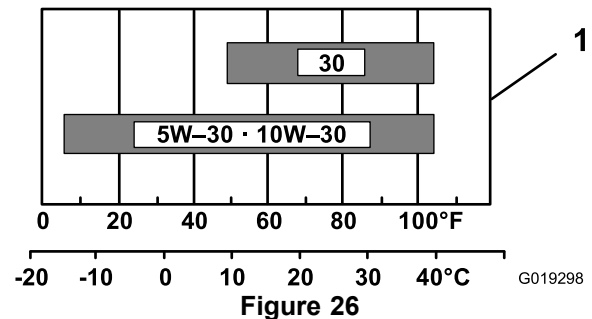
Running the engine with a low oil level can cause engine damage. This type of damage is not covered by warranty.

Do not overfill the crankcase with oil because the engine may be damaged.

Note: SAE 10W-30 is recommended for general use.

Other viscosities shown in the chart may be used when the average temperature in your area is within the indicated range.

Crankcase oil capacity: 0.85 L (0.61 US qt)



1. Oil viscosity range for ambient operating temperatures

Toro Premium Engine Oil is available from your Authorized Toro Dealer.

1. Remove the oil cap/dipstick (Figure 27).

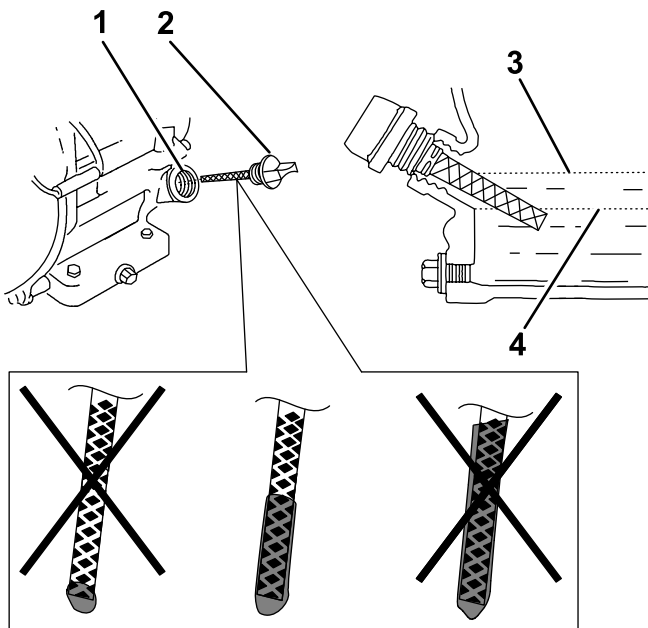


Figure 27

- | | |
|---------------------|----------------------------|
| 1. Fill port | 3. Oil level (upper limit) |
| 2. Oil cap/dipstick | 4. Oil level (lower limit) |

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2. Slowly pour approximately 80% of the specified amount of oil into the fill port (Figure 27).
3. Add additional oil to bring the oil level to the upper limit mark on the dipstick; refer to Checking the Engine Oil Level (page 12).
4. Install the oil cap/dipstick (Figure 27).

Servicing the Spark Plug

Service Interval: Every 100 hours/Every 6 months (whichever comes first)—Check the spark plug.

Every 300 hours/Yearly (whichever comes first)—Replace the spark plug.

Note: Use a 20 mm (13/16 inch) spark plug wrench for removing and installing the spark plug.

Removing the Spark Plug

1. Park the machine on a level surface and turn off the engine; refer to Stopping the Engine (page 13).
2. Ensure that the machine surfaces are cool.
3. Pull the spark-plug wire off the terminal of the spark plug (Figure 28).

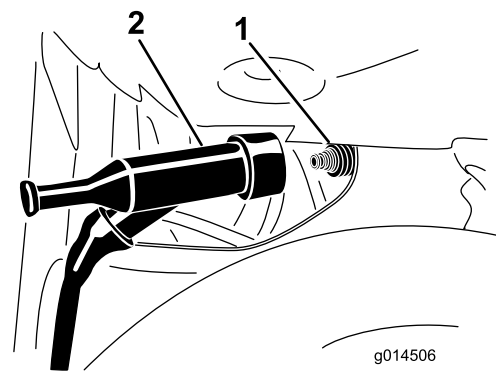


Figure 28

- | | |
|---------------|---------|
| 1. Spark plug | 2. Wire |
|---------------|---------|

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4. Clean around the spark plug.
5. Rotate the spark plug counterclockwise using a 20 mm (13/16 inch) spark-plug wrench to remove the plug and sealing washer (Figure 29).

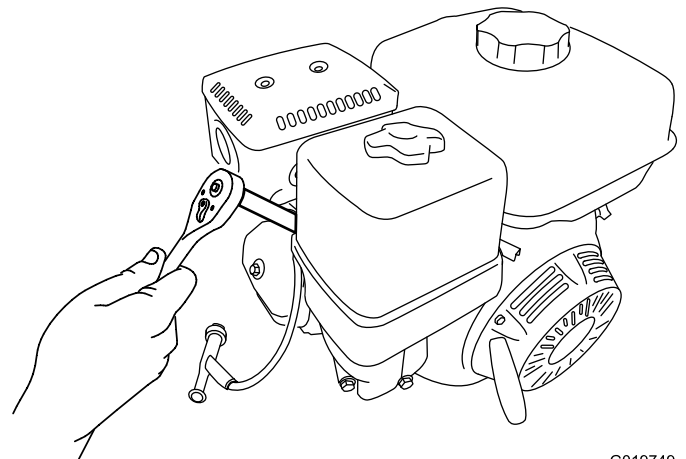


Figure 29

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Checking the Spark Plug

Note: Use a gapping tool/feeler gauge to check and adjust the air gap. Install a new spark plug if necessary.

Air Gap: 0.7 to 0.8 mm (0.028 to 0.031 inch)

Spark plug type: BPR6ES (NGK) or equivalent

1. Look at the center of the spark plug (Figure 30). If you see light brown or gray on the insulator, the engine is operating properly.

Important: Never clean the spark plug. Always replace the spark plug when it has a black coating, worn electrodes, an oily film, or cracks.

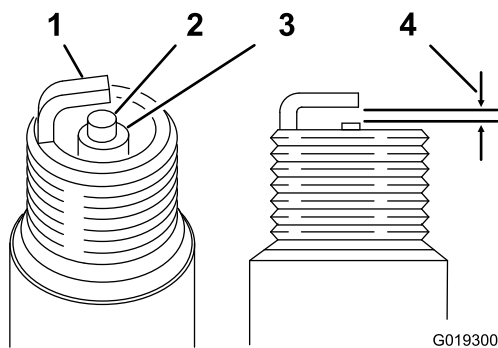


Figure 30

- | | |
|---------------------|--|
| 1. Side electrode | 3. Insulator |
| 2. Center electrode | 4. 0.7 to 0.8 mm (0.028 to 0.031 inch) gap |

2. Use a gapping tool for spark plugs or a feeler gauge to measure the gap between the side electrode and center electrode (Figure 30).
3. If the measured gap is not within the specified range, do the following:
 - A. If the gap is **too small**, carefully bend the side electrode **away** from the center electrode until the gap between the electrodes is within the measured air gap range.
 - B. If the gap is **too large**, carefully bend the side electrode **toward** from the center electrode until the gap between the electrodes is within the measured air gap range.

Installing the Spark Plug

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

1. Thread the spark plug clockwise into the spark-plug hole by hand.

Note: Avoid cross threading the spark plug with the threads of the spark-plug hole.
2. Rotate spark plug clockwise using a 20 mm (13/16 inch) spark-plug wrench until the plug and sealing washer are seated (Figure 29).
3. Tighten the plug as follows:
 - When installing an **in-service** spark plug, tighten the plug an additional 1/8 to 1/4 turn.
 - When installing a **new** spark plug, tighten the plug an additional 1/2 turn.
4. Install the spark-plug wire pushing the wire onto the terminal of the plug (Figure 28).

Fuel System Maintenance

Servicing the Fuel System

Cleaning the Sediment Cup

Service Interval: Every 100 hours/Every 6 months (whichever comes first)—Clean the sediment cup.

Yearly or before storage—Clean the fuel sediment cup.

Underneath the fuel valve is a sediment cup to catch dirt in the fuel.

1. Park the machine on a level surface and stop the engine; refer to Stopping the Engine (page 13).
2. Ensure that the engine and the exhaust system surfaces are cool.
3. Move the lever of the fuel valve to the Off position, all the way to the left (Figure 31).
4. Unscrew the sediment cup.
5. Remove the fuel filter and O-ring (Figure 31).

Note: Make sure not to misplace the O-ring

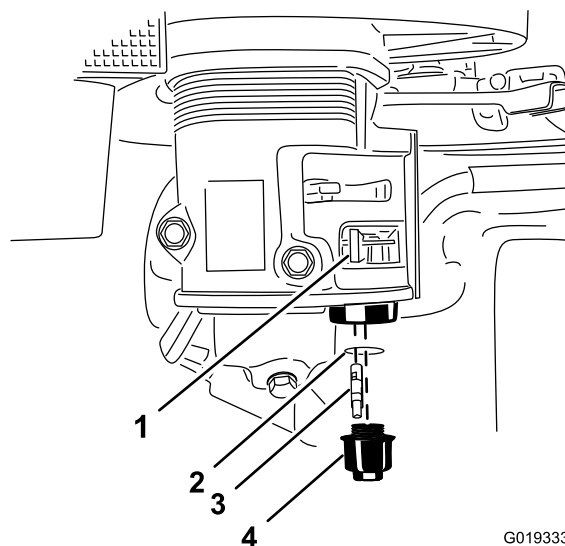


Figure 31

- | | |
|---------------------|-----------------|
| 1. Fuel valve (Off) | 3. Fuel filter |
| 2. O-ring | 4. Sediment cup |

Note: Do not clean the O-ring in solvent.

6. Clean the fuel filter and sediment cup using a nonflammable solvent and dry carefully.
7. Wipe the O-ring with a clean, dry cloth.
8. Install the fuel filter in the bottom of the carburetor (Figure 31).
9. Align the O-ring in to the groove in the sediment cup and install the sediment cup to fuel valve housing.

10. Move the lever of the fuel valve to the On position (all the way to the right) and check for leaks. If it leaks, replace the O-ring.

Drive System Maintenance

Lubricating the Clutch

Service Interval: Monthly

1. From the back of the machine, locate the clutch cover that is between the lifting bracket and the belt (Figure 32).

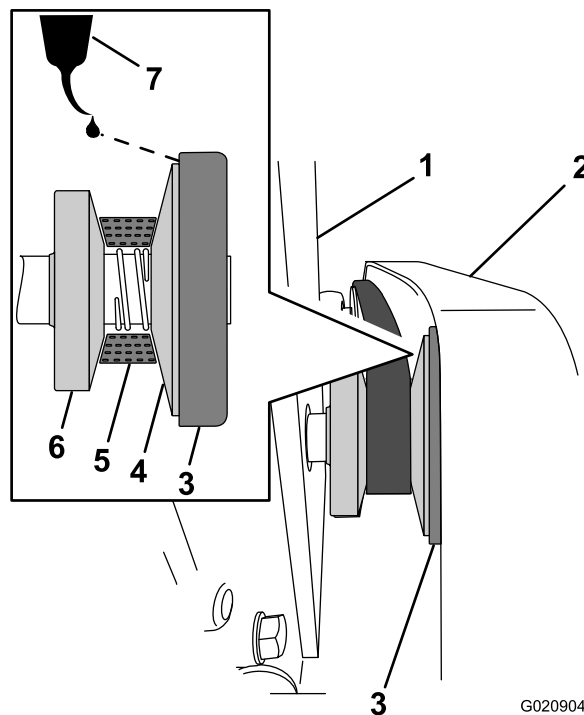


Figure 32

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- | | |
|--------------------|------------------|
| 1. Lifting bracket | 5. Belt |
| 2. Belt guard | 6. Fixed cone |
| 3. Clutch cover | 7. SAE 5W-30 oil |
| 4. Sliding cone | |

2. Apply 2 or 3 drops of SAE 5W-30 oil between the clutch cover and the sliding cone (Figure 32).

Belt Maintenance

Removing and Installing the Belt Guard

Removing the Belt Guard

1. At the back of the machine, locate the right-cross channel (Figure 33 and Figure 34).

Note: The back of the machine is on the side opposite from the eccentric guard.

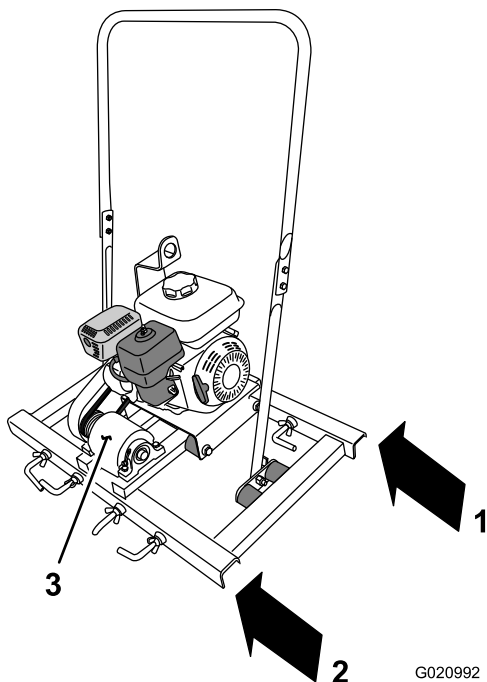


Figure 33

1. Back of the machine
2. Front of the machine
3. Eccentric guard

2. Insert a 32 to 38 mm (1-1/4 to 1-1/2 inch) spacer between the right-cross channel and the engine plate (Figure 34).

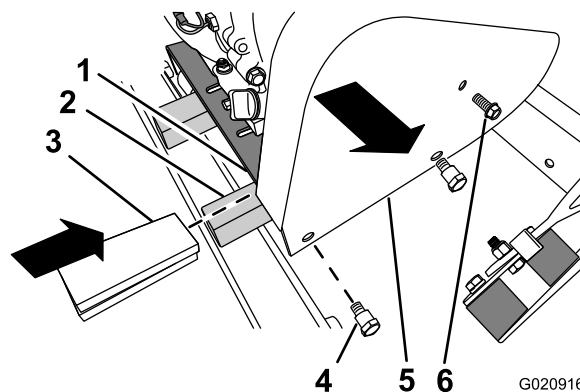


Figure 34

- | | |
|------------------------|-----------------------------|
| 1. Engine deck | 4. Shoulder bolt (3/8 inch) |
| 2. Right-cross channel | 5. Belt guard |
| 3. Spacer | 6. Bolt (1/4 inch) |

Note: The spacer will support the engine when the 2 bolts (3/8 inch) are removed.

3. Remove the bolt (1/4 inch) from the belt guard (Figure 34).
4. Remove the 2 shoulder bolts (3/8 inch) from the belt guard, and remove the belt guard (Figure 34).

Note: Use a strap wrench to keep the isolator from rotating when removing the 3/8 inch bolt (Figure 35).

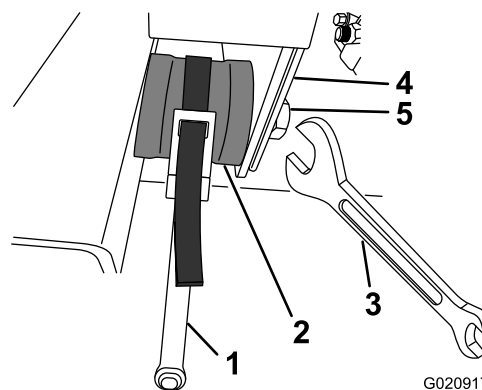


Figure 35

- | | |
|-----------------|--------------------|
| 1. Strap wrench | 4. Belt guard |
| 2. Isolator | 5. Bolt (3/8 inch) |
| 3. Wrench | |

Installing the Belt Guard

1. Align the belt guard over the pulleys.
2. Apply medium strength (service removable thread locking compound) to the threads of the bolt (1/4 inch and 2 shoulder bolts (3/8 inch).
3. Align the (1/4 inch) hole in the belt guard with the hole in the belt guard bracket (Figure 34 and Figure 36).
4. Thread the bolt (1/4 inch) through the belt guard and into the belt-guard bracket (Figure 34 and Figure 36).

Note: Do not tighten the 1/4 inch bolt.

5. Align the holes (3/8 inch) in the belt guard with the threads in the isolators (Figure 34 and Figure 35).
6. Secure belt guard to the isolators with the 2 shoulder bolts (3/8 inch) (Figure 34).

Note: Use a strap wrench keep the isolator from rotating when tightening the 3/8 inch bolt (Figure 35).

7. Tighten the 1/4 inch bolt.
8. Remove the spacers that are between the right-cross channel and the engine plate (Figure 34).

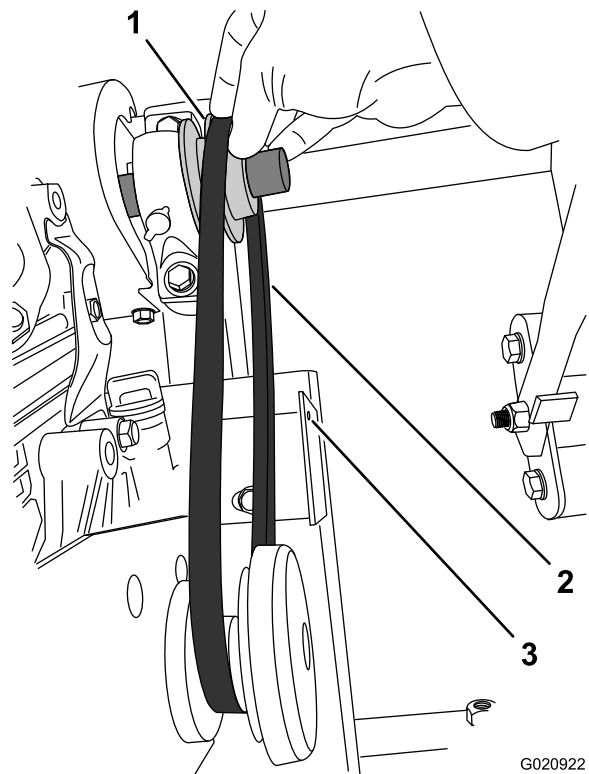


Figure 36

- | | |
|---------------------|-----------------------|
| 1. Eccentric pulley | 3. Belt-guard bracket |
| 2. Belt | |

Servicing the Belt

Service Interval: After the first 25 hours—Inspect and adjust the belt.

Monthly—Inspect and adjust the belt.

3. Slip the belt off the clutch and remove from the machine (Figure 37).

Inspecting the Belt

1. Remove the belt guard; refer to Removing the Belt Guard (page 24).
2. Examine the belt for wear or damage. If the belts are worn or damaged, replace the belts; refer to Inspecting the Belt (page 25).
3. Examine the pulleys for wear, damage and misalignment.
4. Lubricate the clutch; refer to Lubricating the Clutch (page 23).
5. Install the belt guard; refer to Installing the Belt Guard (page 25).

Replacing the Belt

Removing the Belt

1. Remove the belt guard; refer to Removing the Belt Guard (page 24).
2. Lift the belt up and over the shoulder of the eccentric pulley (Figure 36).

Note: Rotate the eccentric pulley by hand to help remove the belt.

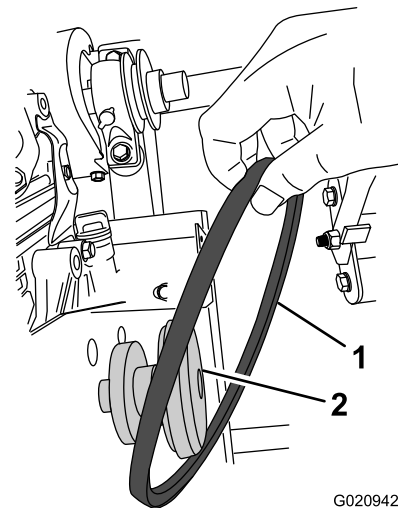


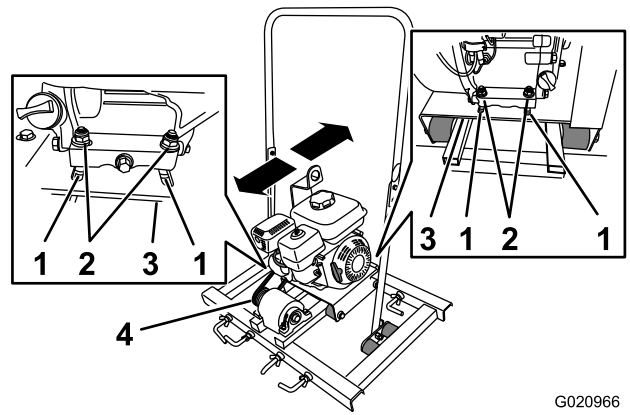
Figure 37

- | | |
|---------|-----------|
| 1. Belt | 2. Clutch |
|---------|-----------|

Installing the Belt

1. Align the belt over the clutch (Figure 37).
2. Pull the belt toward the eccentric pulley (Figure 36).
3. Slip the belt over the shoulder of the eccentric pulley (Figure 36).

Note: Rotate the eccentric pulley by hand to help install the belt.



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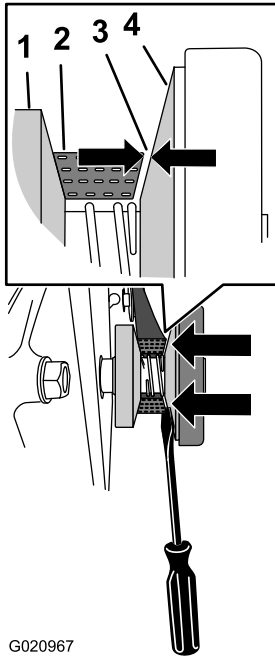
Figure 39

- | | |
|---------|---------------------|
| 1. Bolt | 3. Engine deck |
| 2. Nut | 4. Eccentric pulley |

Adjusting the Belt

1. At the clutch, align the belt against the fixed cone.

Note: Use a flat bladed screwdriver to position the belt against the fixed cone.



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Figure 38

- | | |
|---------------|--|
| 1. Fixed cone | 3. 0.76 to 1.27 mm (0.03 to 0.05 inch) gap |
| 2. Belt | 4. Sliding cone |

4. Adjust the gap between the belt and the clutch as follows:
 - Move the engine away from the eccentric pulley to **reduce** the gap between the belt and the sliding cone (Figure 39).
 - Move the engine toward from the eccentric pulley to **increase** the gap between the belt and the sliding cone (Figure 39).
5. When the gap measurement is within the 0.76 to 1.27 mm (0.03 to 0.05 inch) range (Figure 38), tighten the bolts and nuts that secure the engine to the engine deck to 18 N-m (13 lb-ft).
6. Install the belt guard; refer to Installing the Belt Guard (page 25).

2. Measure the gap between the belt and the sliding cone (Figure 38). If the gap is 0.76 to 1.27 mm (0.03 to 0.05 inch), skip to step 6.
3. Loosen the bolts and nuts that secure the engine to the engine deck (Figure 39).

Cleaning

Cleaning the Machine

Regular cleaning and washing will increase the life span of the machine. Clean the machine after each use, before the cement dries.

Ensure that the fuel tank cap and oil cap/dipstick are secure to avoid getting water in the tank.

Use care when using a high-pressure sprayer, because it can damage warning decals, instruction signs, and the engine.

Important: Lubricate the eccentric bearings after cleaning; refer to Lubrication (page 18).

Storage

Important: You can wash the machine with mild detergent and water. Do not pressure wash the engine or eccentric bearings.

1. Remove concrete, sand, and aggregate from the external parts of the machine, especially the engine. Clean dirt from the outside of the engine's cylinder head fins and housing.
2. Service the air cleaner; refer to Servicing the Air Cleaner (page 19).
3. Grease the machine; refer to Greasing the Machine (page 18).
4. Lubricate the clutch; refer to Lubricating the Clutch (page 23).
5. Change the engine oil; refer to Changing the Engine Oil (page 20).
6. Remove the spark plug and check the condition of each; refer to Servicing the Spark Plug (page 21).
7. For storage over 30 days, condition the fuel system as follows:

Important: Do not use an alcohol-based stabilizer (ethanol or methanol).

Note: A fuel stabilizer/conditioner is most effective when mixed with fresh fuel and used at all times.

Do not store stabilizer conditioned fuel for over 90 days.

- A. Add a petroleum based stabilizer/conditioner to fuel in the tank. Follow mixing instructions from stabilizer manufacturer.
 - B. Start the engine and run it until it stops.
 - C. Choke the engine.
 - D. Start and run the engine until it will not start again.
 - E. Dispose of fuel properly. Recycle as per local codes.
8. For storage over 90 days, condition the engine as follows:
 - A. Remove the spark-plug wire from the spark plug
 - B. Remove the spark plug from the engine and pour two tablespoons of engine oil into the spark plug hole.
 - C. Place rags over the spark plug hole to catch any oil spray and then pull the recoil-start handle to distribute the oil inside the cylinder.
 - D. Install the spark plug, but do not install the spark-plug wire.
 9. Check and tighten all bolts, nuts, and screws. Repair or replace any part that is damaged or defective.
 10. Paint all scratched or bare metal surfaces. Paint is available from your Authorized Service Dealer.

11. Store the machine unit in a clean, dry garage or storage area.
12. Cover the machine to protect it and keep it clean.

Troubleshooting

Problem	Possible Cause	Corrective Action
The engine will not start.	<ol style="list-style-type: none"> 1. The fuel-valve lever is in the Off position. 2. The choke is closed. 3. The choke is open. 4. The engine On/Off switch is in the Off position. 5. The engine oil level is low (engines with the oil-level switch). 6. The fuel tank is empty. 7. The engine contains bad/old fuel. 8. The spark plug is fouled or improperly gapped. 9. The spark plug is wet with fuel (flooded engine). 10. The spark-plug wire is loose or disconnected. 	<ol style="list-style-type: none"> 1. Move the fuel-valve lever to the On position. 2. Open the choke when starting a hot engine. 3. Close the choke when starting a cold engine. 4. Rotate the switch to the On position. 5. Fill the engine, with the recommended oil, to the proper level. 6. Fill the fuel tank with fresh fuel. 7. Drain the fuel tank and carburetor. Fuel the machine with fresh gasoline. 8. Gap or replace the spark plug. 9. Remove the spark plug, dry it, and install the plug. Start the engine with the throttle in the Max position. 10. Remove the spark-plug wire, clean the spark-plug terminal and the terminal socket in the boot of the spark-plug wire, and reinstall the spark-plug wire.
The engine lacks power or runs rough.	<ol style="list-style-type: none"> 1. The air filter is restricted. 2. The engine contains bad/old fuel. 3. There is water or contamination in the fuel. 4. The fuel line is restricted. 5. The choke is closed 6. The spark plug is worn or has buildup on the electrodes. 7. There is too much oil in the engine crankcase. 	<ol style="list-style-type: none"> 1. Clean or replace the air filter element(s). 2. Drain the fuel tank and carburetor. Refuel with fresh gasoline. 3. Drain the fuel tank and carburetor. Fuel the machine with fresh gasoline. 4. Clean the fuel filter and sediment cup. 5. Open the choke. 6. Check the electrode gap and adjust or replace the spark plug. 7. Drain the oil to the proper level.
The belt slips or comes off the pulleys.	<ol style="list-style-type: none"> 1. The belt tension is insufficient. 2. The belt is worn. 3. The eccentric pulley or clutch is worn. 4. The eccentric pulley is misaligned to the clutch. 	<ol style="list-style-type: none"> 1. Adjust the belt tension. 2. Replace the belt. 3. Contact your Authorized Service Dealer. 4. Align the pulley to the clutch.
The eccentric rotates when the throttle of the engine is in the idle position.	<ol style="list-style-type: none"> 1. The belt tension is not adjusted correctly. 	<ol style="list-style-type: none"> 1. Adjust the belt tension.
The eccentric do not rotate when the throttle of the engine is in the run position.	<ol style="list-style-type: none"> 1. The belt tension is not adjusted correctly. 2. The clutch is stuck. 	<ol style="list-style-type: none"> 1. Adjust the belt tension. 2. Contact your Authorized Service Dealer.
The eccentric rotate slowly when the throttle of the engine is in the run position.	<ol style="list-style-type: none"> 1. The belt is worn. 2. The belt tension is not adjusted correctly. 	<ol style="list-style-type: none"> 1. Replace the belt. 2. Adjust the belt tension.

Notes:

Notes:



The Toro Warranty

A limited warranty (see warranty periods below)

Concrete,
Masonry, and
Compaction
Equipment

Conditions and Products Covered

The Toro Company and its affiliate, Toro Warranty Company, pursuant to an agreement between them, jointly warrant your Toro Concrete, Masonry, and Compaction Equipment Products listed below to be free from defects in materials or workmanship.

This warranty covers the cost of parts and labor, but you must pay transportation costs.

The following time periods apply from the date of purchase:

Products	Warranty Period
Concrete Mixers	1 year
• Spindle Bearings	Lifetime* (original owner only)
Mortar Mixers	1 year
• Drum Bearings and Seals	Lifetime* (original owner only)
Forward Plate Compactors	2 years
Reversible Plates	1 year
Rammer Compactors	2 years
Mud Buggy	1 year
Vibrating Trench Roller	2 years
Concrete Saws	1 year
Masonry Saws	1 year
Power Trowels	1 year
Screeds	1 year
Concrete Vibrators	1 year

Where a warrantable condition exists, we will repair the Product at no cost to you including diagnosis, labor, and parts.

*Lifetime Warranty - If the bearing(s) or seal(s) on your mixer fail, it will be replaced under warranty, at no cost for parts or labor.

Instructions for Obtaining Warranty Service

If you think that your Toro Product contains a defect in materials or workmanship, follow this procedure**:

1. Contact any Authorized Servicing Outlet to arrange service at their dealership. To locate one convenient to you, access our website at www.Toro.com. Select "Where to Buy" and select "Contractor" under product type. You may also call our toll free number below.
2. Bring the product and your proof of purchase (sales receipt) to them.
3. If for any reason you are dissatisfied with the Service Outlet's analysis or with the assistance provided, contact us at:

SWS Customer Care Department
Toro Warranty Company
8111 Lyndale Avenue South
Bloomington, MN 55420-1196
Toll Free: 800-888-9926

**Toro Authorized Rental Customers who have purchased products directly from Toro and have signed the Toro Rental Customer Agreement have the ability to perform their own warranty work. Please visit Toro's Rental Portal for electronic warranty claim filing procedures or call the toll free number above.

Owner Responsibilities

You must maintain your Toro Product by following the maintenance procedures described in the *Operator's Manual*. Such routine maintenance, whether performed by a dealer or by you, is at your expense. Parts scheduled for replacement as required maintenance ("Maintenance Parts"), are warranted for the period of time up to the scheduled replacement time

for that part. Failure to perform required maintenance and adjustments can be grounds for disallowing a warranty claim.

Items and Conditions Not Covered

Not all product failures or malfunctions that occur during the warranty period are defects in materials or workmanship. This express warranty does not cover the following:

- Product failures which result from the use of non-Toro replacement parts, or from installation and use of add-on, modified, or unapproved accessories
- Product failures which result from failure to perform required maintenance and/or adjustments
- Product failures which result from operating the Product in an abusive, negligent or reckless manner
- Parts subject to consumption through use unless found to be defective. Examples of parts which are consumed, or used up, during normal product operation include, but are not limited to, belts, wipers, spark plugs, tires, filters, gaskets, wear plates, seals, O-rings, drive chains, clutches.
- Failures caused by outside influence. Items considered to be outside influence include, but are not limited to, weather, storage practices, contamination, use of unapproved coolants, lubricants, additives, or chemicals, etc.
- Normal "wear and tear" items. Normal "wear and tear" includes, but is not limited to, worn painted surfaces, scratched decals, etc.
- Repairs necessary due to failure to follow recommended fuel procedure (consult *Operator's Manual* for more details)
 - Removing contaminants from the fuel system is not covered
 - Use of old fuel (more than one month old) or fuel which contains more than 10% ethanol or more than 15% MTBE
 - Failure to drain the fuel system prior to any period of non-use over one month
- Any component covered by a separate manufacturer's warranty
- Pickup and delivery charges

General Conditions

Repair by an Authorized Servicing Outlet or Self-Service as an Authorized Rental Customer is your sole remedy under the warranty.

Neither The Toro Company nor Toro Warranty Company is liable for indirect, incidental or consequential damages in connection with the use of the Toro Products covered by this warranty, including any cost or expense of providing substitute equipment or service during reasonable periods of malfunction or non-use pending completion of repairs under this warranty. All implied warranties of merchantability and fitness for use are limited to the duration of this express warranty. Some states do not allow exclusions of incidental or consequential damages, or limitations on how long an implied warranty lasts, so the above exclusions and limitations may not apply to you.

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

Except for the engine warranty coverage and the Emissions warranty referenced below, if applicable, there is no other express warranty. The Emissions Control System on your Product may be covered by a separate warranty meeting requirements established by the U.S. Environmental Protection Agency (EPA) or the California Air Resources Board (CARB). Refer to the California Emission Control Warranty Statement supplied with your Product or contained in the engine manufacturer's documentation for details.

Countries Other than the United States or Canada

Customers who have purchased Toro products outside the United States or Canada should contact their Toro Distributor (Dealer) to obtain guarantee policies for your country, province, or state. If for any reason you are dissatisfied with your Distributor's service or have difficulty obtaining guarantee information, contact the Toro importer. If all other remedies fail, you may contact us at Toro Warranty Company.

Australian Consumer Law: Australian customers will find details relating to the Australian Consumer Law either inside the box or at your local Toro Dealer.