Form No. 3422-784 Rev B

Engine Conversion Kit

Serial Number 270000001 and Before Kawasaki-Powered Walk-Behind Greensmaster® 1000 and 1600

Model No. 130-6454

Model No. 130-6455

Installation Instructions

Introduction

If you require a spark arrester, contact your Authorized Service Dealer. Genuine Toro spark arresters are approved by the USDA Forestry Service.

Important: **These installation instructions contain engine operation and maintenance information that supersedes the engine operation and maintenance procedures in your machine *Operator's Manual*.**

Before operating or maintaining the machine or engine, always refer to the operation and safety instructions in your *Operator's Manual*.

Save these instructions.

Important: **This engine's warranty is provided by the engine manufacturer. Please refer to the engine manufacturer's warranty and emissions system warranty included in the literature packet. That warranty applies only to the engine. It does not expand or otherwise alter any express or implied warranty terms or warranty period that may apply to the product into which the engine is installed.**

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Register at www.Toro.com.

CE

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3422-784 B

⚠ 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.

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Safety

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.



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Installation

For Models 04052 and 04060 made in 2008 or later.

Note: If the machine is equipped with an incandescent light kit, order a new kit; contact your Authorized Service Dealer for more information.

1

Removing the Existing Engine

No Parts Required

Procedure

Important: **Save all removed parts unless otherwise noted.**

1. Remove and discard the wire harness.
2. Remove the bellcrank cover and keep the 1/4 turn stud, 2 washers, mounting bracket, and the mounting bracket screws and washers.

   Note: Discard the bellcrank cover.
3. Remove the V-belts from the driver pulley.
4. Remove the torque spring, washer, bolt, and cable link from the clutch lever (Figure 2).
5. Disconnect the traction cable from the clutch assembly on the engine.
6. Disconnect the throttle control cable from the traction lever assembly.
7. Disconnect the brake cable from the brake assembly.
8. Remove the bolt, washer, handle pivot pin, and flange-head nut securing the handle assembly to the machine (Figure 1).

   Note: You may discard the handle assembly.

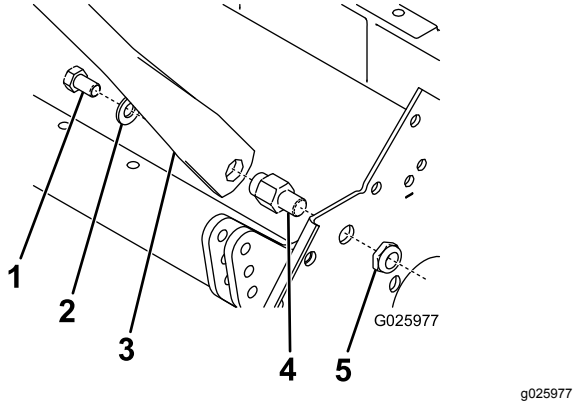


Figure 1

1. Bolt
2. Washer
3. Handle assembly
4. Handle pivot pin
5. Flange-head nut

9. Remove the existing engine, engine mounting bolts, and nuts.
10. Remove and discard the existing engine mounting bracket.

    Important: **Retain the existing engine mounting bracket bolts.**

2

Installing the New Engine

Parts needed for this procedure:

1	Engine assembly
1	Engine conversion mounting bracket

Procedure

Note: Refer to Figure 7 for installing the new engine.

1. Clean the frame and check for damage or wear.
2. Install the existing torsion spring, washer, and bolt to the new clutch lever (Figure 2).

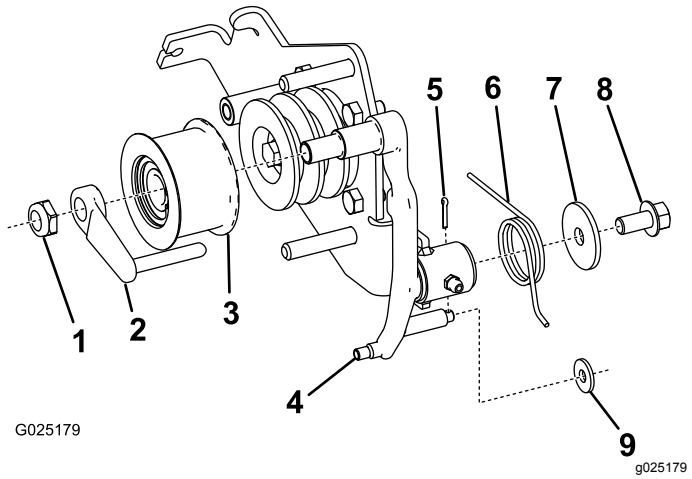


Figure 2

1. Lock nut
2. Belt guide
3. Idler pulley assembly
4. Clutch lever
5. Cotter pin
6. Torsion spring (existing)
7. Washer (existing)
8. Bolt (existing)
9. Washer

3. Secure the bent leg of the torsion spring to the clutch lever using a washer and cotter pin.
4. Remove the traction lever assembly and necessary parts from the existing clutch bracket and install them on the new clutch bracket (Figure 3).

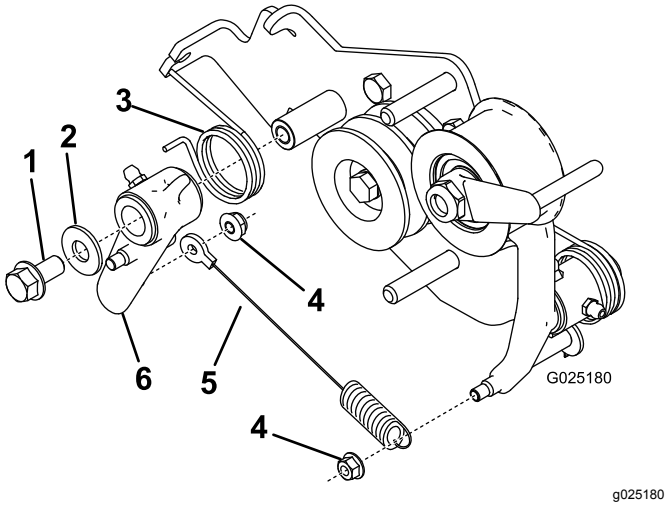


Figure 3

1. Bolt
2. Washer
3. Torsion spring
4. Nut (existing)
5. Cable link (existing)
6. Traction lever assembly

5. Connect the existing cable link to the traction lever assembly and the clutch lever using 2 nuts from the existing assembly (Figure 3).
6. Install the engine conversion mounting bracket to the machine with the previously removed bolts.

   Note: To make installing the engine to the frame easier, hand tighten the bolts.
7. Mount the engine onto the engine conversion mounting bracket using 3 of the existing bolts and nuts, leaving the front right mounting hole open.

   Note: To make installing the engine to the frame easier, hand tighten the bolts.

3

Installing the Cables

Parts needed for this procedure:

1	Handle assembly
2	Clip

Procedure

1. Install the new handle assembly to the machine using the previously removed bolt, washer, handle pivot pin, and flange-head nut (Figure 4).

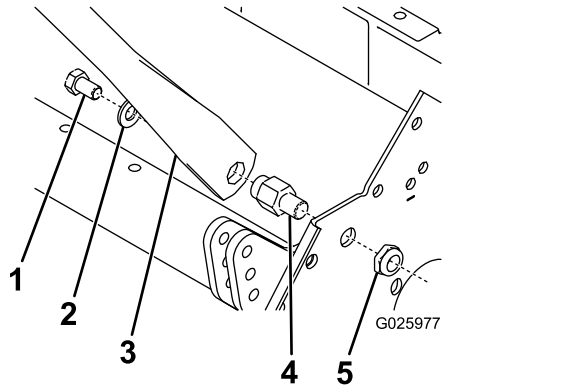


Figure 4

1. Bolt
2. Washer
3. Handle assembly
4. Handle pivot pin
5. Flange-head nut

2. Connect the throttle cable to the engine.
3. Connect the brake cable to the brake assembly.
4. Using the existing throttle cable clip, attach the new throttle cable to the rear of the differential housing (Figure 5).

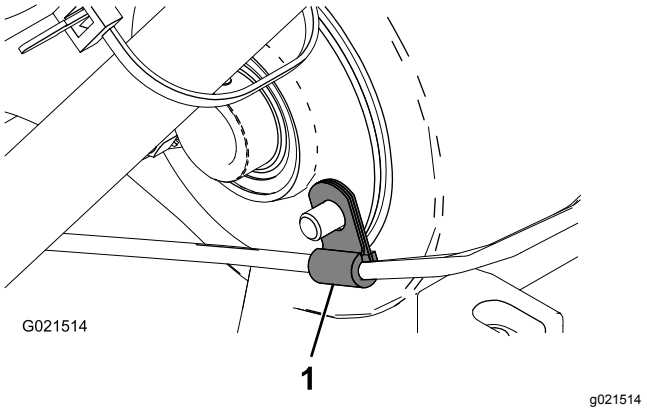


Figure 5

1. existing clip

5. Attach the new clip to the throttle cable and bolt it to the engine conversion mounting bracket using the front right bolt (Figure 6).

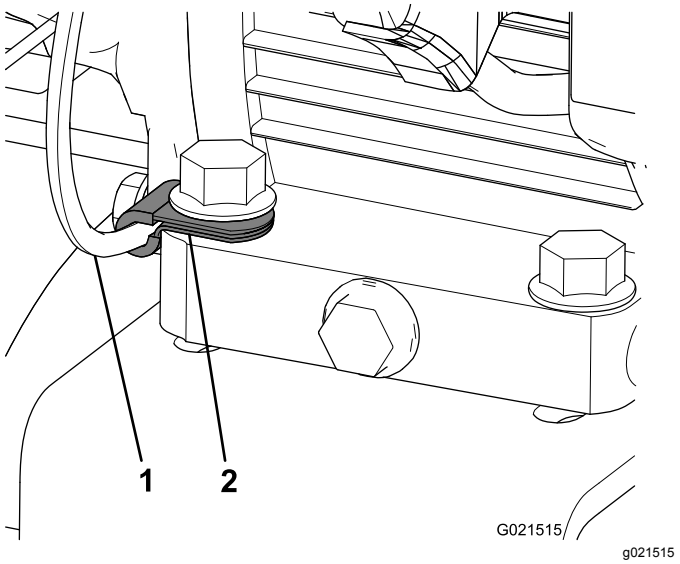


Figure 6

1. Throttle cable
2. New clip

6. Connect the traction cable to the traction lever assembly.

4

Completing the Installation

Parts needed for this procedure:

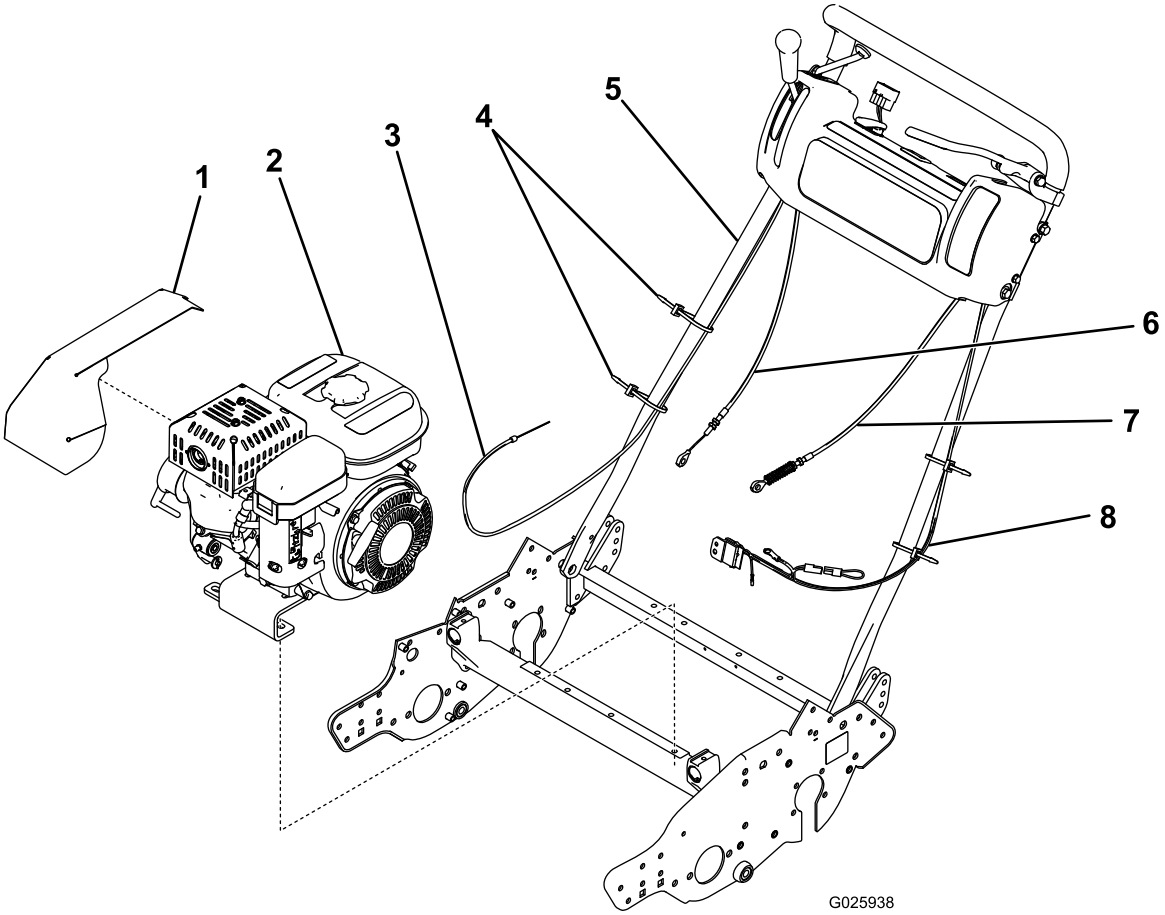
1	Bellcrank cover
4	Cable tie

Procedure

1. Install the V-belts.
2. Align the pulleys, and adjust the traction cable and V-belt tension; refer to your *Operator's Manual*.

   Note: If you cannot properly adjust the traction cable, order Part No. 94-5870.
3. Tighten all of the engine and engine conversion mounting bracket bolts.
4. Route the wire harness up the left side of the handle.
5. Snap the wire harness into place under the console cover.
6. Connect the wire harness to the hour meter and the engine power switch.
7. Install the 1/4 turn stud and 2 washers to the bellcrank cover, and install the cover assembly, mounting bracket, and mounting bracket screws and washers.
8. Attach the cables and wire harness to the handles using the 4 new cable-ties.
9. Lubricate the machine; refer to your *Operator's Manual*.
10. Fill the engine crankcase with oil; refer to your *Operator's Manual*.
11. Adjust the engine speed to the following specifications:

High idle (no load)	3375 ±100 rpm
Low idle (no load)	1565 ±150 rpm



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Figure 7

1. Bellcrank cover
2. Engine assembly
3. Throttle cable
4. Cable ties
5. Handle assembly
6. Clutch cable
7. Brake cable
8. Wire harness

Product Overview

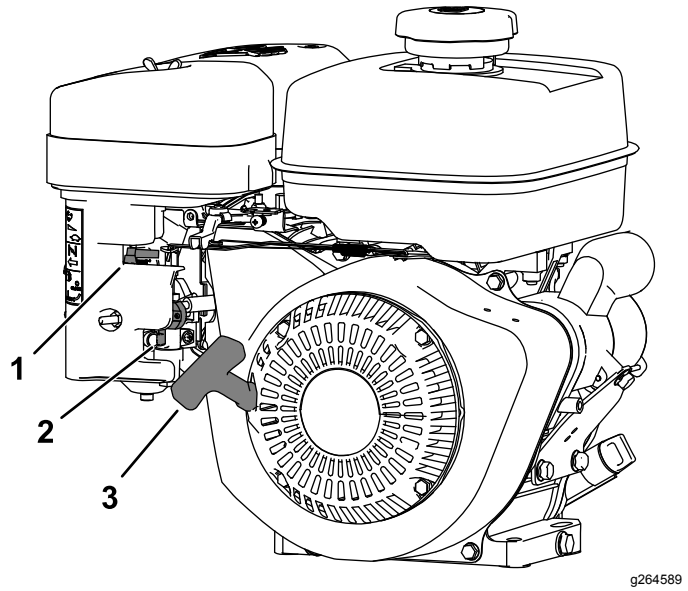


Figure 8

1. Choke lever
2. Fuel-shutoff valve
3. Recoil starter handle

Controls

Choke Control

The choke control is located at the left side of the control console; you use it to help start a cold engine (Figure 8).

Note: Do not start or run a warm engine with the choke in the ON position.

- Pull up on the choke control to set the choke to the ON position.
- Push down on the choke control to set the choke to the OFF position.

Fuel-Shut-Off Valve

The fuel-shut-off valve is located at the front, right side of the engine below the fuel tank (Figure 8).

Note: Close the fuel-shut-off valve when the machine is not used for a few days, during transport to and from the job site, or when the machine is parked inside a building; refer to Opening and Closing the Fuel-Shut-Off Valve (page 9).

Operation

Fuel Specification

Petroleum fuel	Use unleaded gasoline with an octane rating of 87 or higher ((R+M)/2 rating method).
Ethanol blended fuel	Use an unleaded-gasoline blend 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 and/or engine damage which may not be covered under warranty.

Important: **For best results, use only clean, fresh fuel (less than 30 days old).**

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

Using Stabilizer/Conditioner

Use a fuel stabilizer/conditioner in the machine to provide the following benefits:

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

Add the correct amount of fuel stabilizer/conditioner to the gasoline.

Note: A 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: 2.7 L (0.71 US gallons)

1. Park the machine on a level surface and shut off the engine.
2. Allow the engine to cool.
3. Clean around the fuel-tank cap and remove it (Figure 8).

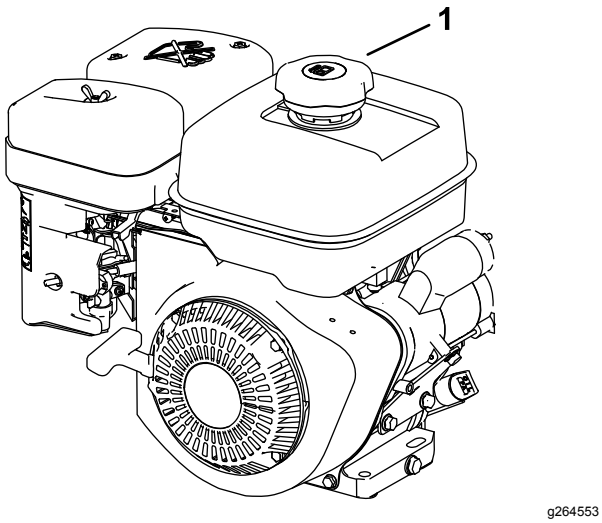


Figure 9

1. Fuel-tank cap

4. Fill the tank with fuel (Figure 8) to within 6 to 13 mm (1/4 to 1/2 inch) from the top of the tank. **Do not fill into the filler neck of the tank.**

   Important: **Do not fill the tank more than 6 mm (1/4 inch) from the top of the tank because the fuel needs room to expand.**
5. Install the fuel-tank cap securely.
6. Wipe up any spilled fuel.

Opening and Closing the Fuel-Shut-Off Valve

Control fuel flow to the engine with the fuel-shut-off valve as follows:

- Rotate the handle for the fuel-shut-off valve 90 degrees clockwise to the open the valve.
- Rotate fuel-shut-off valve handle 90 degrees counterclockwise to close the valve.

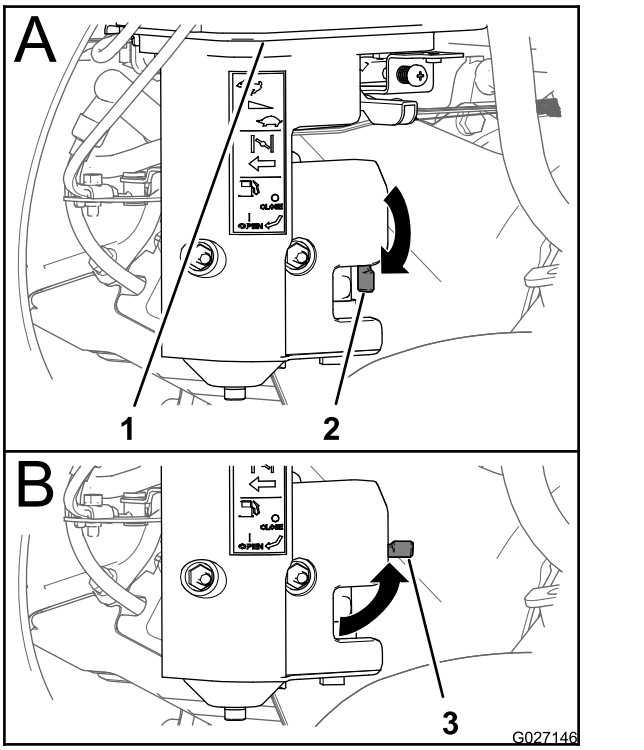


Figure 10

1. Fuel tank
2. Fuel-shutoff valve (open position)
3. Fuel-shutoff valve (closed position)

Maintenance

Important: **Refer to your engine owner's manual for additional maintenance procedures.**

Recommended Maintenance Schedule(s)

Maintenance Service Interval	Maintenance Procedure
After the first 20 hours	• Change the engine oil.
Before each use or daily	• Check the engine-oil level.
Every 50 hours	• Clean the foam air-cleaner element (More often under severe conditions).
Every 100 hours	• Change the engine oil • Check and gap the spark plug.
Every 200 hours	• Replace the dual element air filter.

Preparing the Machine for Maintenance

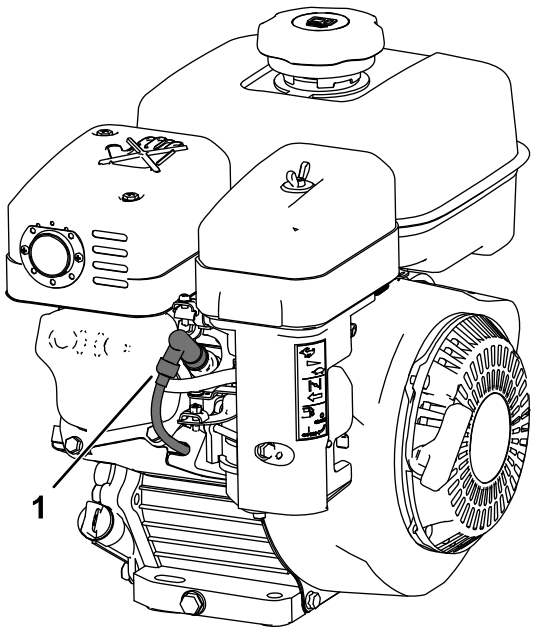
⚠ WARNING

While you are maintaining or adjusting the machine, someone could start the engine. Accidentally starting the engine could seriously injure you or other bystanders.

Remove the key from the ignition, engage parking brake, and pull the wire(s) off the spark plug(s) before you do any maintenance. Also push the wire(s) aside so it does not accidentally contact the spark plug(s).

Perform the following before servicing, cleaning, or making any adjustments to the machine.

1. Park the machine on a level surface.
2. Shut off the engine and remove the key from the machine (if equipped).
3. Engage the parking brake.
4. Wait for all moving parts to stop allow the engine to cool before servicing, storing, or making repairs.
5. Disconnect the spark-plug wire (Figure 11).



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Figure 11

1. Spark-plug wire

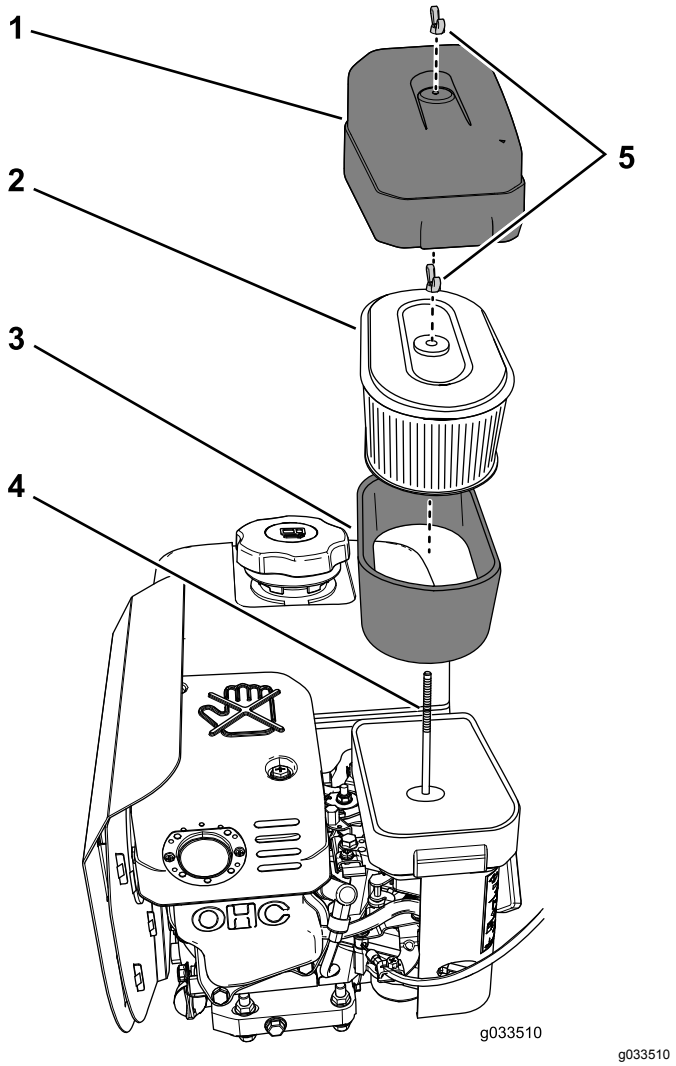
Servicing the Air Cleaner

Service Interval: Every 200 hours

Important: **Do not apply oil to the foam or paper element.**

Removing the Foam and Paper Elements

1. Prepare the machine for maintenance; refer to Preparing the Machine for Maintenance (page 10).
2. Clean around the air cleaner to prevent dirt from getting into the engine and causing damage (Figure 12).



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Figure 12

1. Air-cleaner cover
2. Paper-filter element
3. Foam element
4. Hold-down rod
5. Wing nuts

3. Rotate the wing nut that secures the air-cleaner cover counterclockwise and remove the air-cleaner cover (Figure 12).
4. Rotate the wing nut that secures the paper and foam-filter elements counterclockwise and remove the filter elements from the hold-down rod (Figure 12).
5. Carefully pull the foam element off the paper element (Figure 12).

   Note: Inspect the paper and foam-filter elements for damage or an excessive accumulation of dirt. Replace the damaged filters. Clean the foam-filter element if it is dirty. Replace the paper-filter element if it is dirty.

Servicing the Foam Filter Element

Service Interval: Every 50 hours

1. Inspect the element for tears, an oily film, or damaged (Figure 12).

   Important: **Replace the foam element if it is worn or damaged.**
2. Wash the foam element in liquid soap and warm water. When the element is clean, rinse it thoroughly.
3. Dry the element by squeezing it in a clean cloth.
4. Air dry the foam-filter element.

Installing the Foam and Paper-Filter Elements

Important: **To prevent engine damage, always operate the engine with the complete foam and paper air-cleaner assembly installed.**

1. Carefully slide the foam-filter element onto the paper-filter element (Figure 12).
2. Align the hole in the top plate of the paper-filter element with the hold-down rod of the carburetor (Figure 12).
3. Secure the filter elements to the carburetor with the wing nut (Figure 12) that you removed in step 4 of Removing the Foam and Paper Elements (page 11).
4. Align the hole in the air-cleaner cover with the hold-down rod (Figure 12) and secure the cover to the rod with the wing nut that you removed in step 3 of Removing the Foam and Paper Elements (page 11).

Engine Oil Specification

Oil Type: Detergent oil (API service SJ or higher)

Oil viscosity: Refer to the table below.

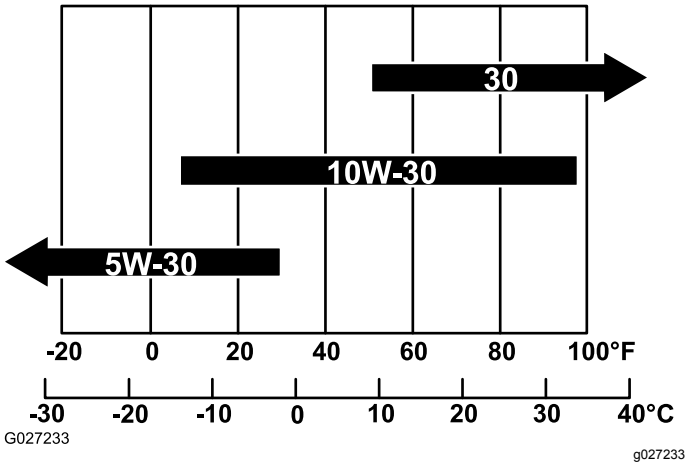


Figure 13

Checking the Engine-Oil Level

Service Interval: Before each use or daily

Important: **Do not operate the engine with the oil level below the Low (or Add) mark on the dipstick, or over the Full mark.**

1. Move the machine to a level surface.
2. Prepare the machine for maintenance; refer to Preparing the Machine for Maintenance (page 10).
3. Allow the engine to cool.
4. Remove the dipstick from the engine and wipe the dipstick with a clean rag (Figure 14).

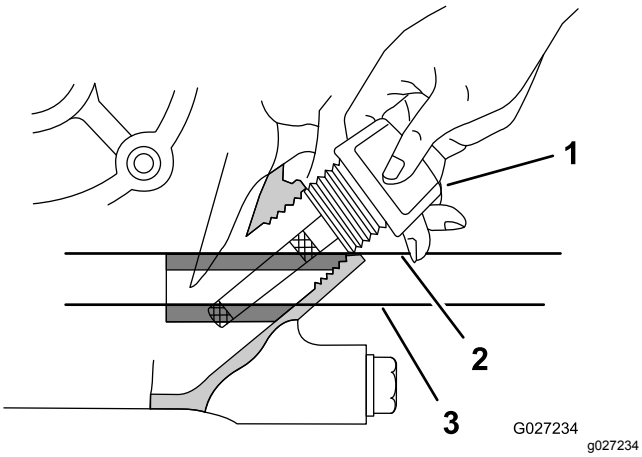


Figure 14

1. Dipstick
2. Maximum oil level
3. Minimum oil level

5. Insert the dipstick from the engine as shown in Figure 14.

   Note: Do not thread the dipstick into the filler neck when checking the engine oil level.
6. Remove the dipstick from the filler neck and look at the oil level in the dipstick (Figure 14).

   Note: The engine oil level must cover between the hatch marked areas on the dipstick (Figure 14).
7. If the oil level is low, wipe off the area around the filler neck and add the specified oil until the oil level is between the hatch marked areas on the dipstick.

   Important: **Do not overfill the engine with oil.**
8. Hand tighten the dipstick into the filler neck (Figure 14).

Changing the Engine Oil

Service Interval: After the first 20 hours

Every 100 hours

Draining the Engine Oil

Important: **Do not operate the engine with the oil level below the Low (or Add) mark on the dipstick, or over the Full mark.**

1. Start and run the engine for a few minutes to warm the engine oil.
2. Prepare the machine for maintenance; refer to Preparing the Machine for Maintenance (page 10).
3. At the rear of the machine, place a drain pan under the drain plug.

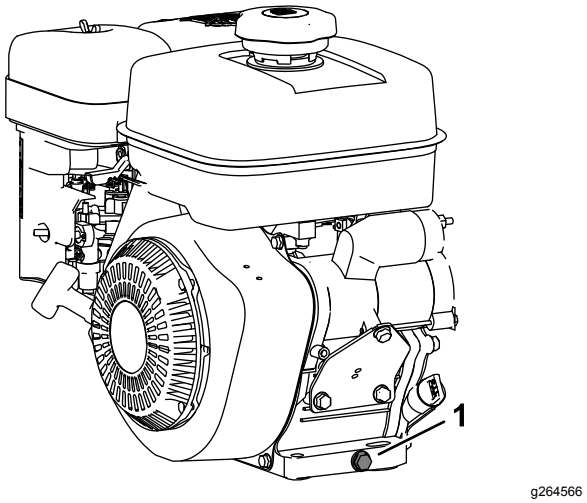


Figure 15

1. Drain plug

4. Remove the drain plug from the engine and allow the oil to drain completely.
5. Push down on the handle to tip the machine and engine backward, allowing all the oil to run into the drain pan.

   Important: **Do not tip the machine at an angle greater than 25°. Tipping the machine beyond 25° leads to oil leaking into the combustion chamber and/or fuel leaking out of the fuel-tank cap.**
6. Install the drain plug and refill the crankcase with the specified oil; refer to Adding Oil to the Engine (page 13).
7. Torque the drain plug to 20 to 23 N·m (15 to 17 ft-lbs).
8. Wipe up any spilled oil and dispose of the used oil properly.

Adding Oil to the Engine

Engine Oil Capacity: 0.6 L (20 fl oz)

Important: **Do not operate the engine with the oil level below the Low (or Add) mark on the dipstick, or over the Full mark.**

1. Remove the dipstick from the filler neck of the engine and wipe clean the dipstick with a rag (Figure 16).

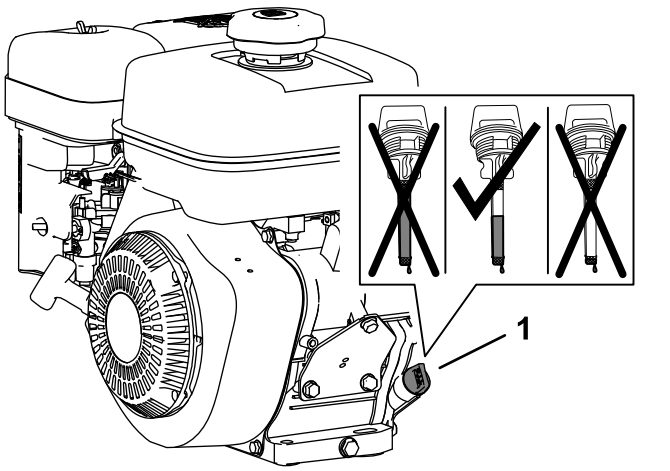


Figure 16

1. Dipstick in filler neck

2. Slowly pour 0.6 L (20 fl oz) of the specified oil into the crank case of the engine through the filler neck (Figure 16).
3. Insert the dipstick from the engine as shown in Figure 17.

   Note: Do not thread the dipstick into the filler neck when checking the engine oil level.

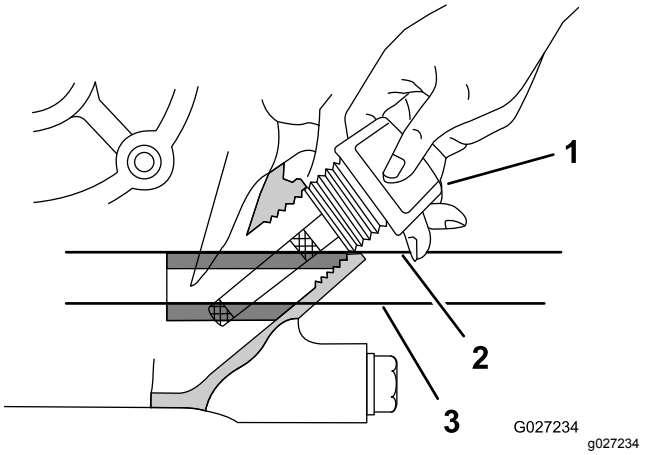


Figure 17

1. Dipstick
2. Maximum oil level
3. Minimum oil level

4. Remove the dipstick from the filler neck and look at the oil level in the dipstick (Figure 15).

   Note: The engine oil level must cover between the hatch marked areas on the dipstick (Figure 16).
5. If the oil level is low, add the specified oil into the engine until the oil level is between the hatch marked areas on the dipstick.

   Note: **Do not** overfill the engine with oil.
6. Hand tighten the dipstick into the filler neck (Figure 17).

Servicing the Spark Plug

Service Interval: Every 100 hours

Spark Plug Specification

Spark Plug Type: NGK BR6HS, Champion RTL86C, or equivalent

Removing the Spark Plug

1. Prepare the machine for maintenance; refer to Preparing the Machine for Maintenance (page 10).
2. Remove the spark plug as shown in Figure 18.

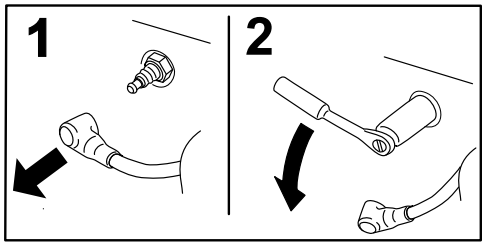


Figure 18

Checking the Spark Plug

Air Gap: 0.6 to 0.7 mm (0.02 to 0.03 inch)

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.

Use a gapping tool/feeler gauge to check and adjust the air gap to 0.6 to 0.7 mm (0.02 to 0.03 inch).

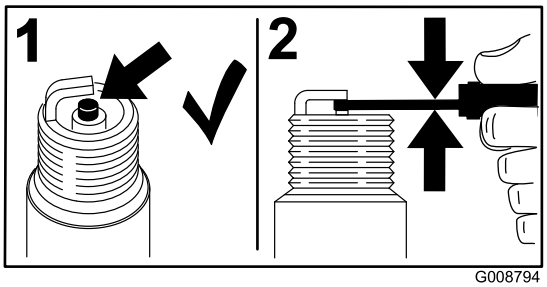


Figure 19

Installing the Spark Plug

Tighten the spark plug as follows:

- New spark plug—12 to 15 N·m (8.7 to 10.8 ft-lb)
- In-service spark plug—23 to 27 N·m (16.6 to 19.5 ft-lb)

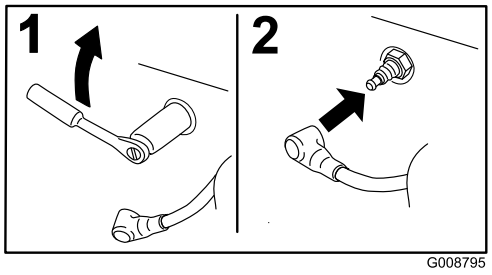


Figure 20

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.



Count on it.