TORO®

Slope Sensor Kit
Groundsmaster® 360 Multi-Purpose Machine
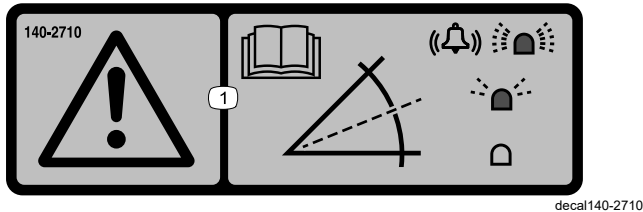Model No. 31250

Installation Instructions

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.

140-2710

decal140-2710

1. Warning—read the *Operator's Manual*; a fast flashing light and alarm sounding indicates a steep slope; a slow flashing light indicates a moderate slope; no light indicates normal operating conditions.

Register at www.Toro.com.

CE

Original Instructions (EN)
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CV

Installation

Loose Parts

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

Description	Qty.	Use
No parts required	–	Prepare the machine.
No parts required	–	Update the machine software.
Sensor module Bolt (1/2 x 1 inch) Nut (1/4 inch) Bolt (1/4 x 1-1/4 inch) Mounting bracket Wire harness Alarm Cable tie	1 2 2 2 1 1 1 4	Install the kit.
No parts required	–	Calibrate the sensor.
Decal	1	Install the decal.

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

Preparing the Machine

1. Park the machine on a level surface.

2. Disengage the power takeoff and lower the attachments.

3. Engage the parking brake.

4. Shut off the engine and remove the key.

5. Wait for all movement to stop.

6. Allow machine components to cool.

Updating the Machine Software

Update the machine software to the latest version in ToroDiag.

Note: This ensures the software is updated for calibration and use of the slope sensor.

Installing the Kit

Installing the Sensor Module

1. Disconnect the battery. Refer to the *Operator's Manual* for the procedure.

2. Move the seat forward.

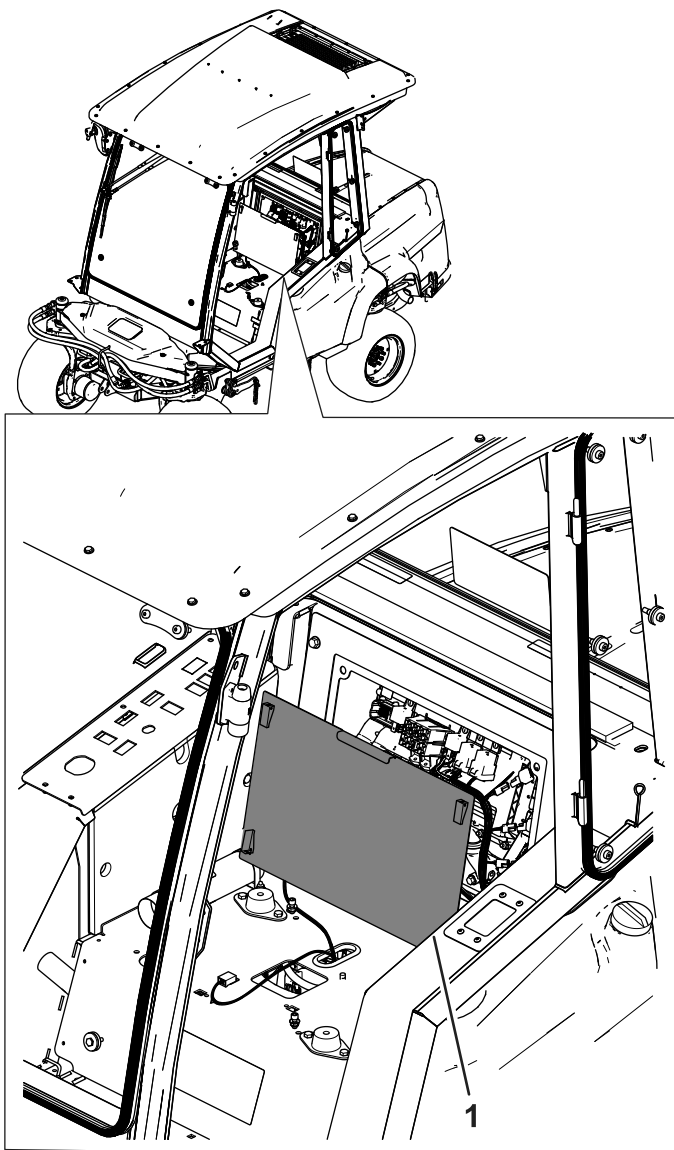3. Tilt the back cover forward or remove to gain access to the wires (Figure 1 or Figure 2).
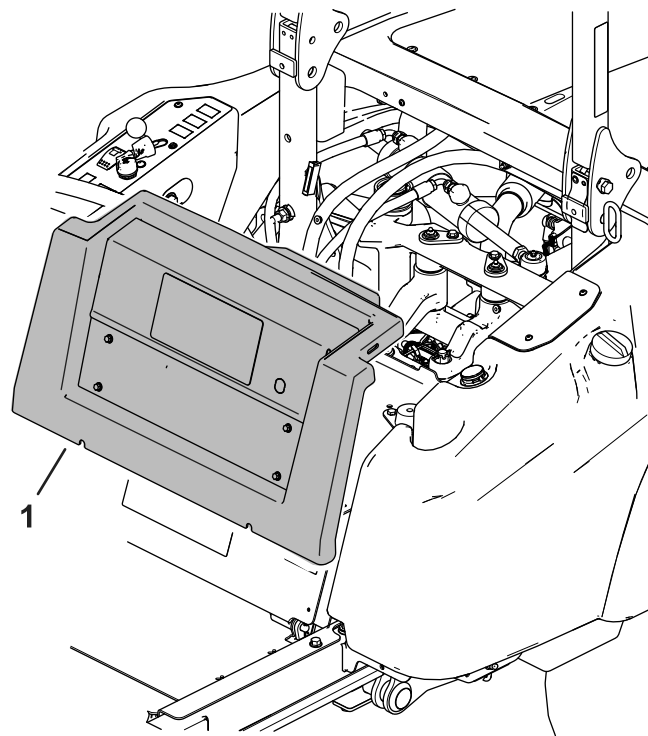

Figure 2
Machine with rollbar

1. Back cover

4. Install the sensor bracket to the frame with 2 bolts (1/2 x 1 inch); refer to Figure 3.
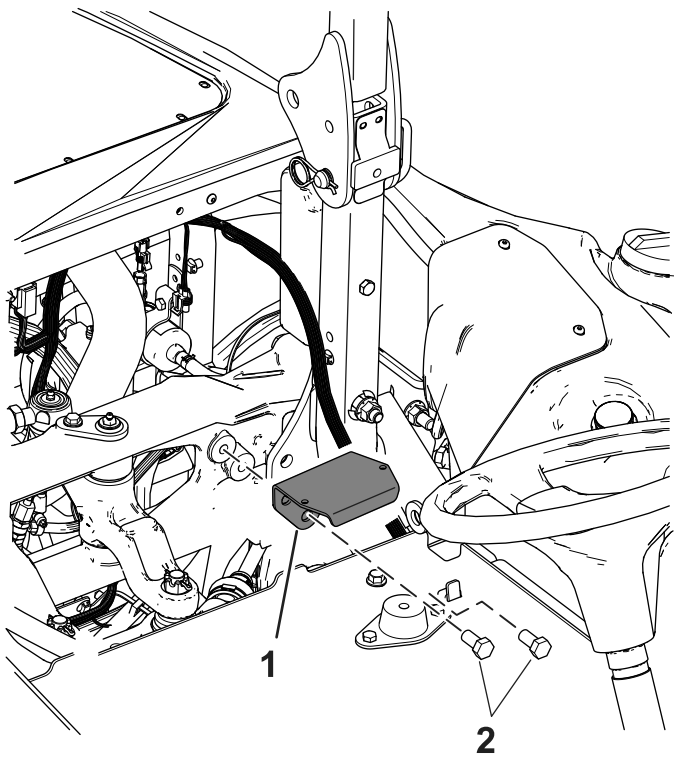
    Note: The holes in the frame are threaded.

Figure 1
Machine with cab

1. Back cover

Figure 3

1.	Sensor bracket	2.	Bolt (1/2 x 1 inch)

5. Install the sensor to the sensor bracket with 2 bolts (1/4 x 1-1/4 inch) and 2 nuts (1/4 inch); refer to Figure 4.
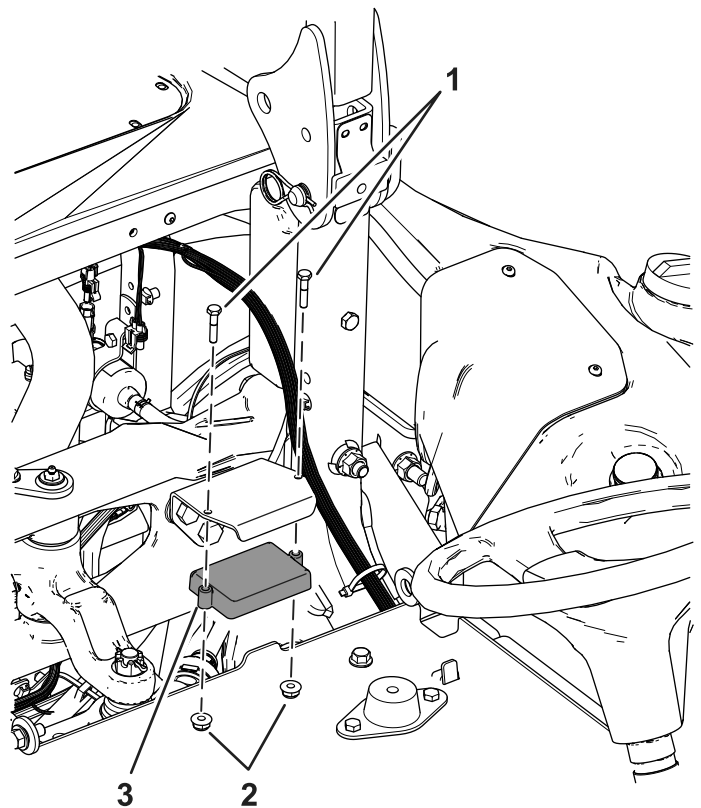

Figure 4

1.	Bolt (1/4 x 1-1/4 inch)	3.	Nut (1/4 inch)
2.	Sensor		

6. Plug the 90° connector into the sensor (Figure 5 and Figure 8).

Figure 5

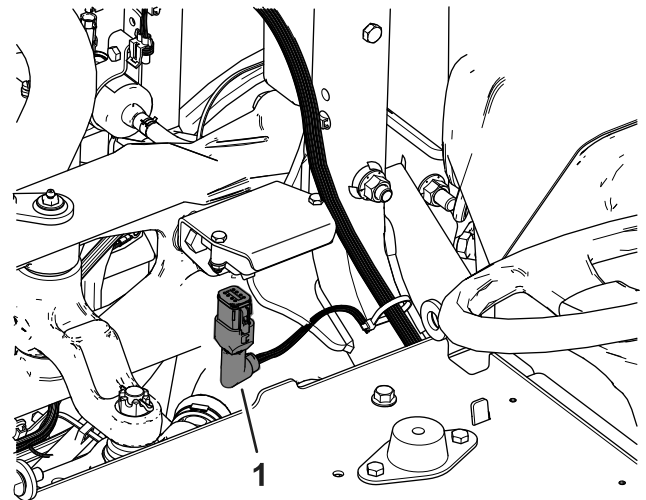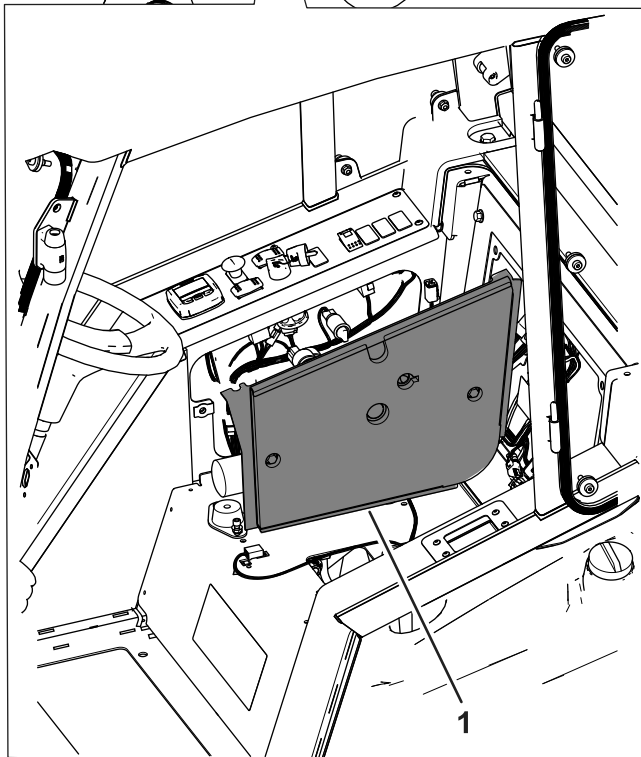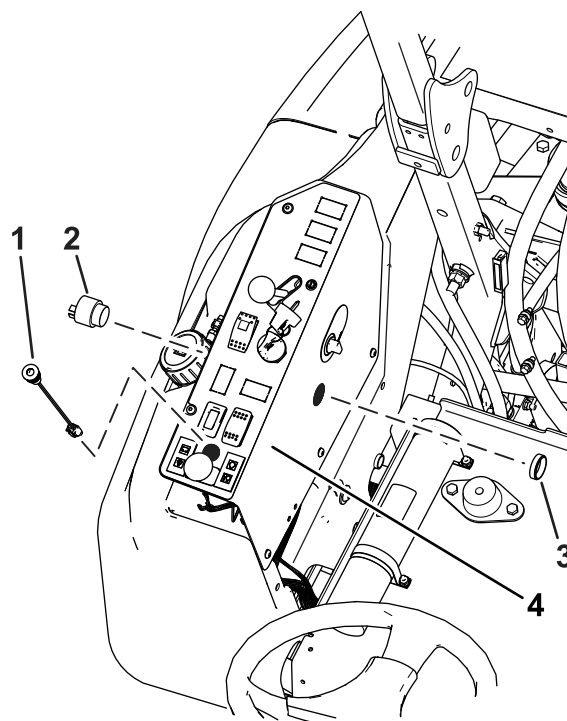|	
1.	90° connector

7. Remove the control panel on the console or loosen and raise up the control panel (Figure 6 or Figure 7).

Figure 6
Machine with cab

1. Side cover

Figure 7
Machine with rollbar

1.	Light	3.	Threaded ring
2.	Alarm	4.	Console panel

8. Remove the knockout for the alarm.

9. Install the alarm (Figure 7).

    Note: Installing the light and removing the decal area is for machines without an InfoCenter only.

10. Remove the area in the console decal for the light.

11. Install the light from the top of the console (Figure 7).

Routing the Wire Harness

1. Route the wire harness under the seat pan and along the along the existing wire harness in the cross channel (Figure 8).

2. Route the wire harness to the controls.

3. Install the middle connector to the machine wire harness connector labled TELEMATICS port or EXPANSION port (Figure 8).

4. Connect the wire harness to the light and the alarm (Figure 8).

Figure 8

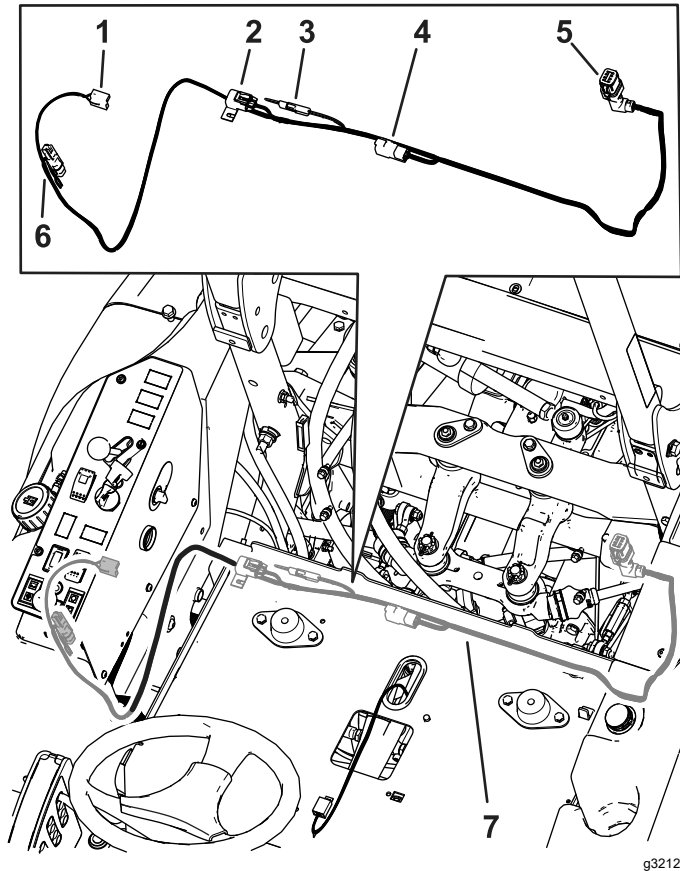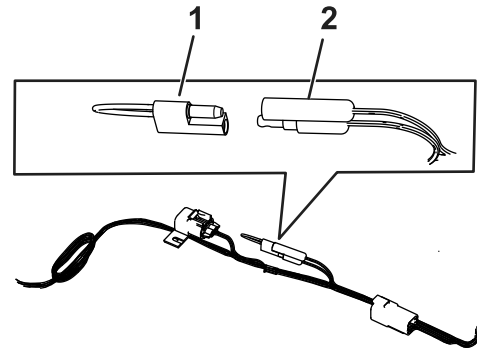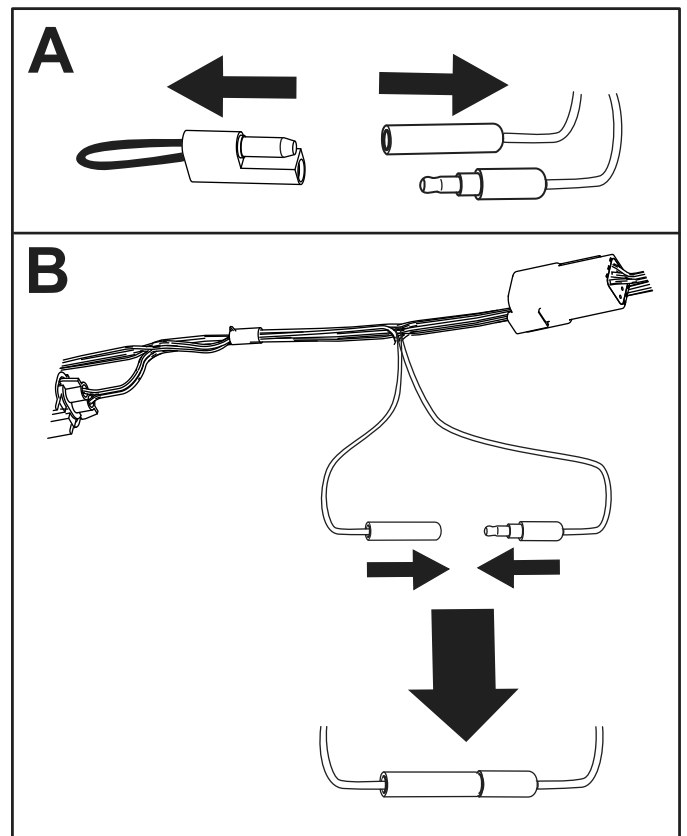|	
1. Alarm connector	5. 90° connector
2. Fuse holder	6. Light connector
3. Calibration connectors	7. Route the harness under the seat next to the existing harness.
4. Middle connector	

5. Secure the harness away from any hot or moving parts with cable ties.

6. Install the control panel to the console for machines with a cab or install the control panel for machines with a rollbar (Figure 6 or Figure 7).

7. Connect the battery. Refer to the *Operator's Manual* for the procedure.

Calibrating the Sensor

1. While on a flat surface, remove the plug from the calibration connectors (Figure 9).

Figure 9

1. Calibration connectors	2. Plug

2. Plug the calibration connectors together as shown in Figure 9.

3. Turn the ignition key to the ON position, but do not start the engine.

4. Use the following processes depending what your machine has installed.

   A. Infocenter display:

      i. The InfoCenter shows advisory 195, Slope Sensor Calibrating.

Note: The LED light at the top of the display screen (Figure 10) blinks as the sensor calibrates.

ii. When the InfoCenter shows advisory 196, Slope Sensor Calibrated, the light no longer blinks, and the alarm beeps once, turn the ignition key to the OFF position.
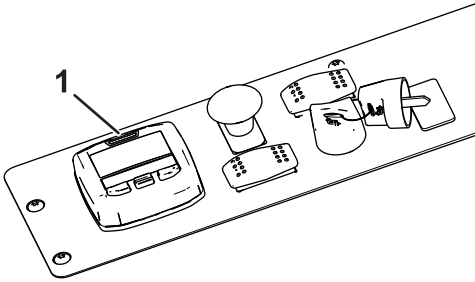

Figure 10

g321267

1. LED light

B. Console light:

i. The LED light (Figure 11) blinks as the sensor calibrates.

ii. When the LED light turns off and the alarm beeps once, the sensor is calibrated.
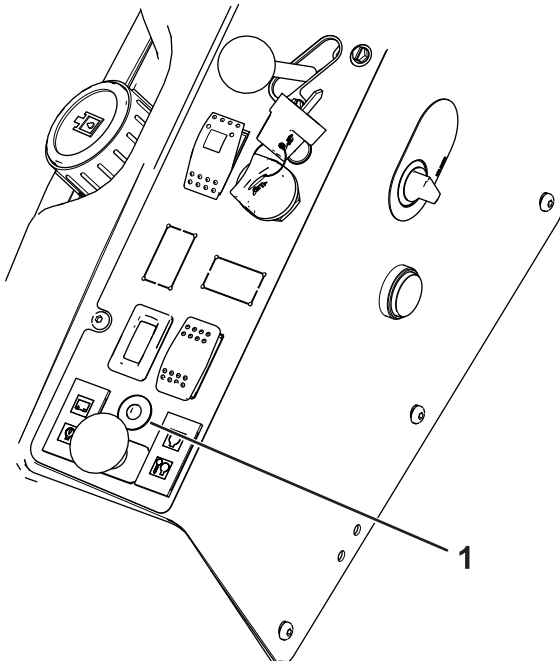
iii. Turn the ignition key to the OFF position.

Figure 11

g321266

1. LED light

5. Disconnect the calibration connectors and install the plug onto the connectors (Figure 12).
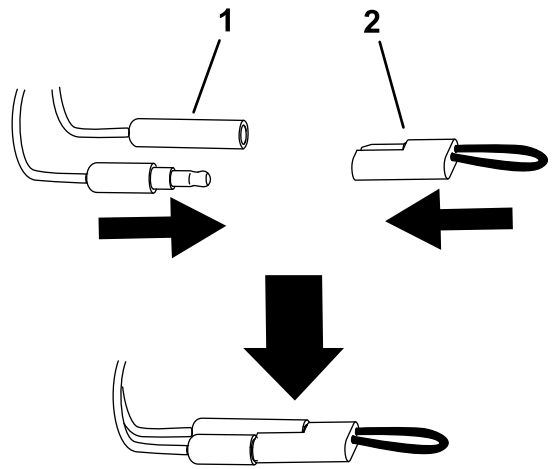

Figure 12

g315597

1. Calibration connectors   2. Plug

Installing the Decal

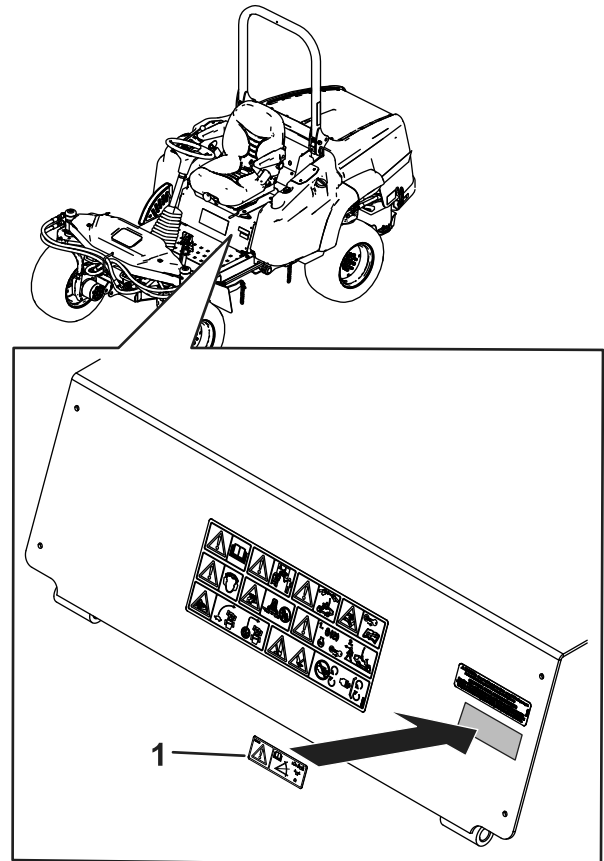Install the decal on the machine as shown in Figure 13.

Figure 13

g321255

1. Decal

Operation

Use the following procedures depending what your machine has installed.

⚠ WARNING

Slopes are a major factor related to loss-of-control and tip-over accidents, which can result in severe injury or death.

Use extreme caution when operating the machine on a slope.

Using the Slope Sensor with an InfoCenter

The light and alarm indicates the severity of the slope (Figure 10):

- No light—normal operating conditions
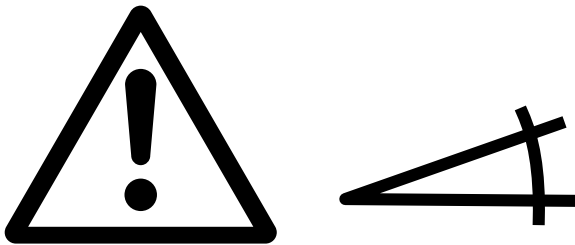- Slow, flashing red light and Advisory 196 displaying on the screen—moderate slope

Figure 14
Advisory 196

- Fast, flashing red light, audible alarm, and Advisory 197 displaying on the screen—steep slope; proceed to a more shallow slope.
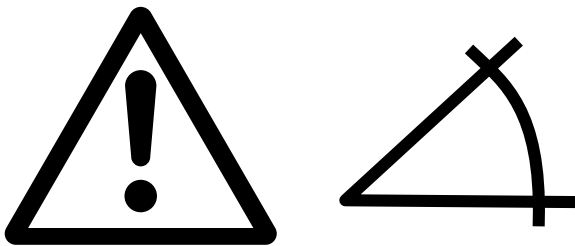

Figure 15
Advisory 197

Using the Slope Sensor with the LED Light

The light and alarm indicates the severity of the slope(Figure 11):

- No light—normal operating conditions
- Slow, flashing red light—moderate slope
- Fast, flashing red light and audible alarm—steep slope; proceed to a more shallow slope.