



Energy Expansion Kit

Groundsmaster® e3200 Traction Unit

Model No. 161-0859

Installation Instructions

The Energy Expansion Kit allows you to install 2 or 4 additional HyperCell® batteries to a machine equipped with 11 batteries, resulting in a total of 13 or 15 batteries.

Safety

Refer to your traction unit *Operator's Manual* for electrical system safety information.

Installation

Loose Parts

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

Procedure	Description	Qty.	Use
1	No parts required	–	Prepare the machine.
2	No parts required	–	Remove the battery spacers and bus bars.
3	HyperCell® battery (sold separately; refer to your authorized Toro distributor) Wire harness Bolt	2 or 4 2 4	Install the batteries.
4	No parts required	–	Adjust the rear weight (for machines with 15 batteries only).
5	No parts required	–	Use Toro DIAG to configure and verify battery settings.
6	No parts required	–	Complete the installation.



1

Preparing the Machine

No Parts Required

Procedure

1. Park the machine on a level surface.
2. Ensure that the parking brake is engaged.
3. Shut off the machine and remove the key.
4. Turn the battery-disconnect switch to the OFF position.
5. Raise the hood.
6. Use a digital multimeter to measure the voltage across the positive and negative bus bars.

The voltage should be less than 1 VDC. If the voltage is above 1 VDC, ensure that the key switch is in the OFF position and the battery-disconnect switch is in the OFF position, then check the voltage again. If the voltage is still above 1 VDC, there may be a battery fault; refer to the traction unit *Service Manual* or your authorized Toro distributor.

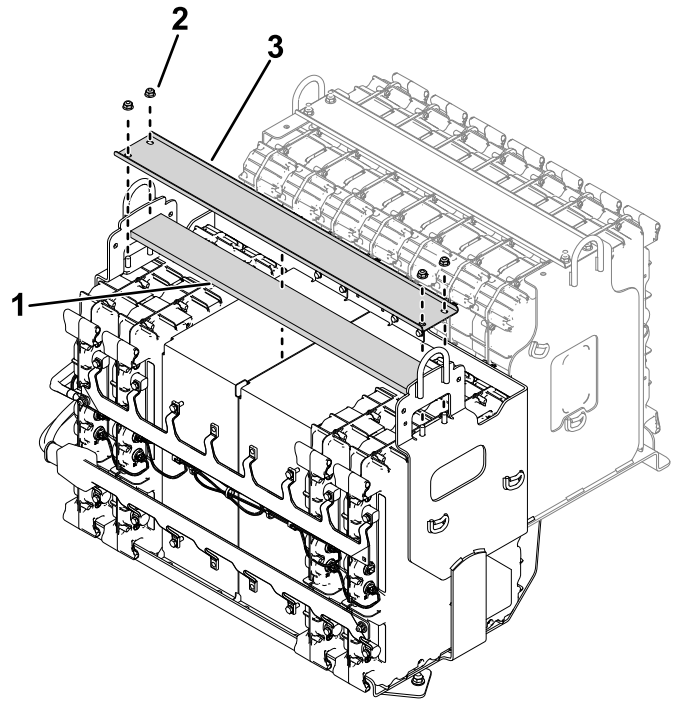


Figure 1

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1. Foam pad
2. Nut
3. Channel support

2. Remove the wire harness from the battery spacers and the batteries (Figure 2).

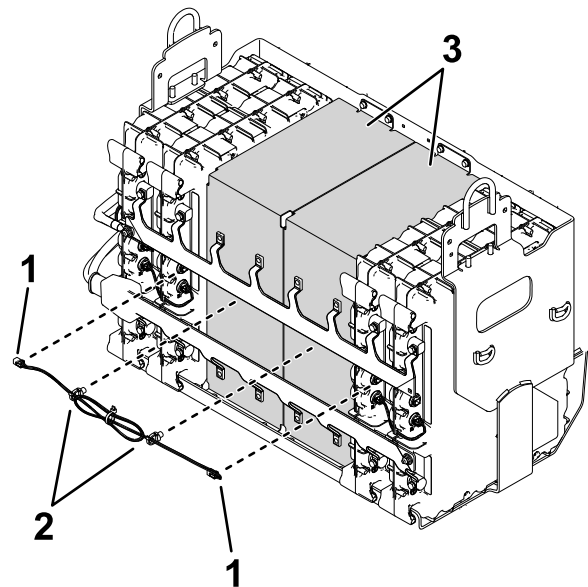


Figure 2

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1. Wire-harness connection—batteries
2. Wire-harness connection—spacers
3. Battery spacers

3. Remove the battery spacers (Figure 2) from the battery compartment.

2

Removing the Battery Spacers and Bus Bars

No Parts Required

Procedure

Retain all removed parts for later installation.

1. Remove the channel support and foam pad from the battery compartment that contains 4 batteries (Figure 1).

If you are installing 2 batteries (13 total batteries installed on the machine), retain a battery spacer for later installation.

- Remove the bus bars (Figure 3) from the battery compartment.

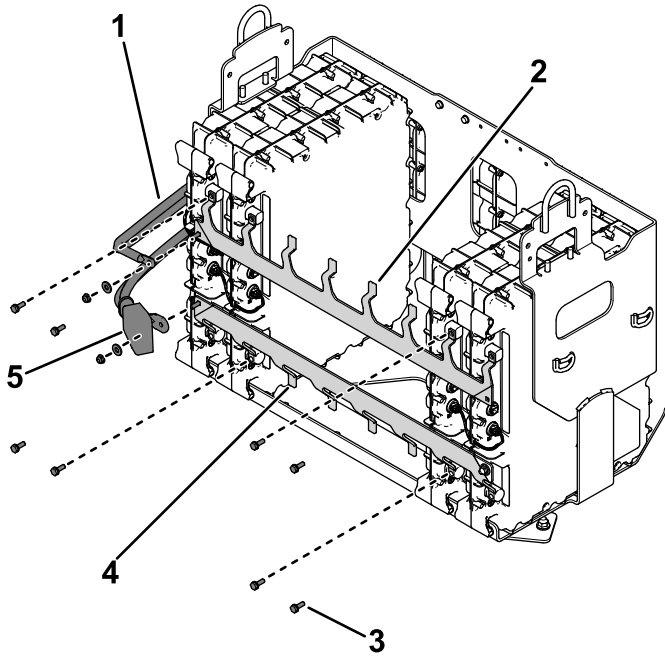


Figure 3

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- | | |
|------------------------|----------------------|
| 1. Black battery cable | 4. Lower bus bar |
| 2. Upper bus bar | 5. Red battery cable |
| 3. Bolt | |

3

Installing the Batteries

Parts needed for this procedure:

2 or 4	HyperCell® battery (sold separately; refer to your authorized Toro distributor)
2	Wire harness
4	Bolt

Procedure

- Insert your desired amount of new batteries into the battery compartment.
 - Figure 4 shows 2 installed batteries (13 total):

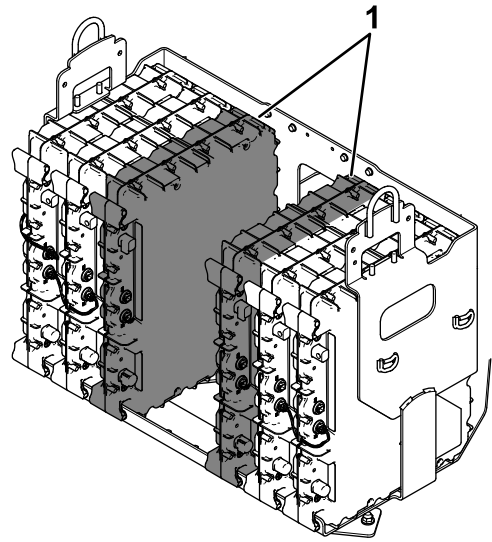


Figure 4

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- 2 installed batteries

- Figure 5 shows 4 installed batteries (15 total):

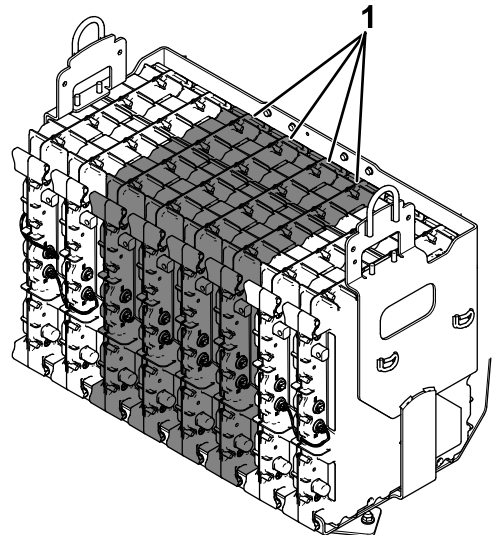
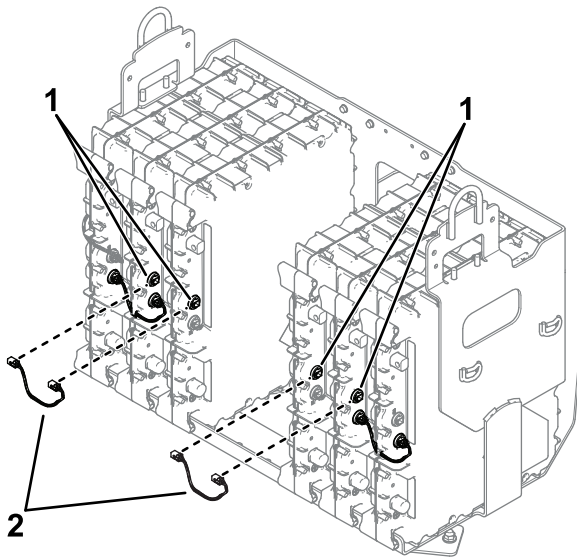


Figure 5

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- 4 installed batteries
-
- Connect the new wire harnesses to the battery ports labeled D2 (Figure 6).



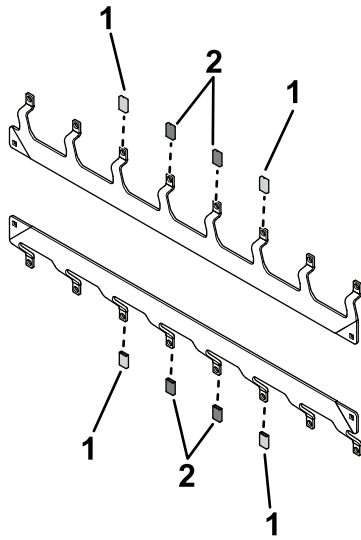
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Figure 6

Machine with 13 installed batteries shown

1. Battery ports (labeled D2)
2. Wire harnesses

3. Remove the appropriate amount of caps from the bus bars (Figure 7).



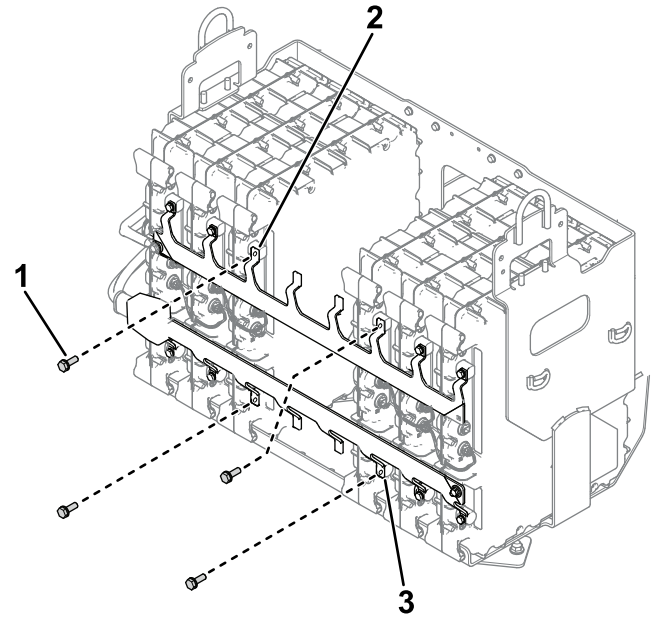
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Figure 7

1. Caps (removed for machine with 13 batteries)
2. Caps (removed for machines with 15 batteries)

4. Perform the following steps to install the bus bars:
 - A. Use the previously removed bolts to loosely secure the bus bars to the batteries (Figure 3).
 - B. Use the previously removed hardware to install the battery cables to the bus bars (Figure 3).

- C. Use the bolts included in the kit to loosely secure the bus bars to the new batteries (Figure 8).



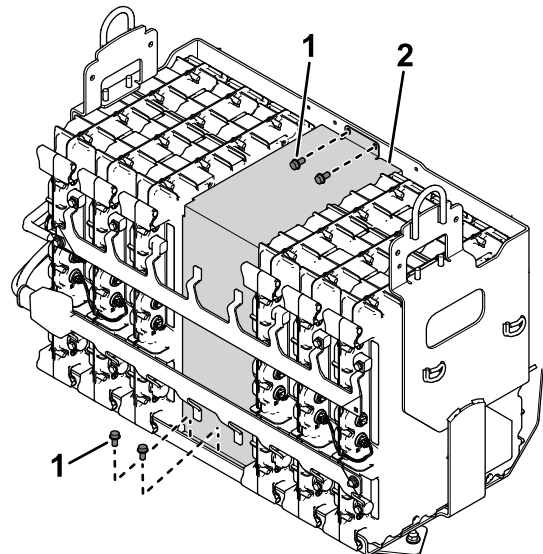
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Figure 8

Machine with 13 installed batteries shown

1. Bolt
2. Upper bus bar
3. Lower bus bar

5. If your machine has 13 installed batteries:
 - A. Use the previously removed bolts to install a battery spacer to the battery-compartment gap (Figure 9).



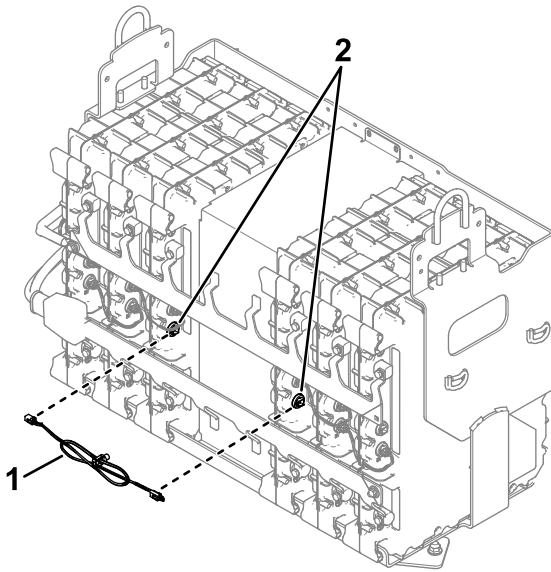
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Figure 9

1. Bolt
2. Battery spacer

- B. Install the wire harness (shown in Figure 2) that you removed in the previous procedure

to the battery ports labeled D1; refer to [Figure 10](#).



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Figure 10

1. Wire harness (previously removed)
 2. Battery ports (labeled D1)
-
6. Verify that the bus bars are seated properly and torque the bolts that you used to secure the bus bars to the batteries ([Figure 3](#) and [Figure 8](#)) to 11 N·m (95 in-lb).
 7. Install the channel support and foam pad; refer to [Figure 1](#).

4

Adjusting the Rear Weight

For Machines with 15 Batteries Only

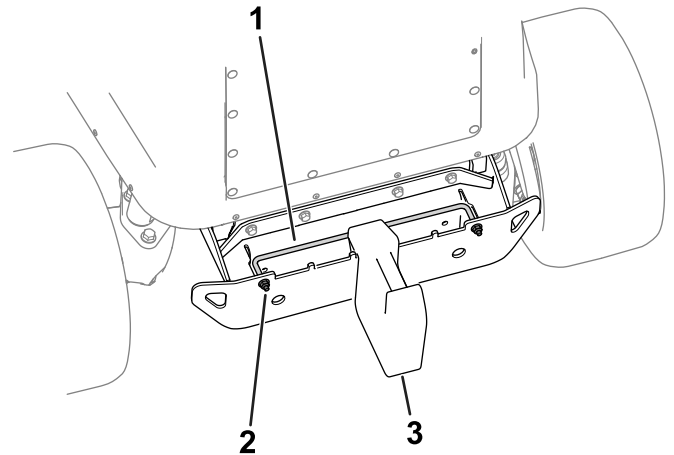
No Parts Required

Procedure

Machines with 15 total batteries should be equipped with 1 weight on the bumper. If you installed 4 additional batteries to the machine, remove 1 of the existing weights from the bumper.

Note: Machines with 13 total batteries should be equipped with 2 weights on the bumper; no weight adjustments are needed.

1. Loosen the hardware that secures the weight-lock rod to the bumper.
2. Remove a weight and position the remaining weight at the center of the bumper as shown in [Figure 11](#)



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Figure 11

1. Weight-lock rod
2. Nut
3. Weight

-
3. Tighten the weight-lock-rod hardware to secure the weight to the bumper.

5

Using Toro DIAG to Configure and Verify Battery Settings

No Parts Required

Preparing to Use Toro DIAG

You must use Toro DIAG to configure the number of equipped batteries on the machine and verify their software revision level.

1. Turn the battery-disconnect switch to the OFF position.
2. Remove the charger-cable cover (Figure 12).

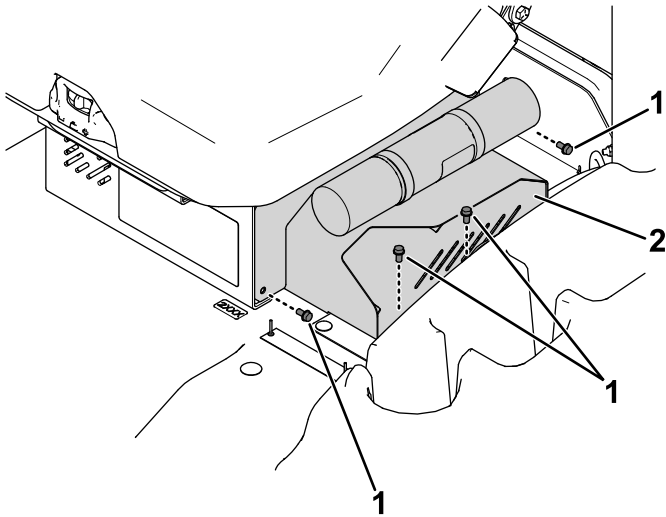


Figure 12

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1. Bolts
2. Charger-cable cover

3. Remove the DC power connector from the charger (Figure 13).

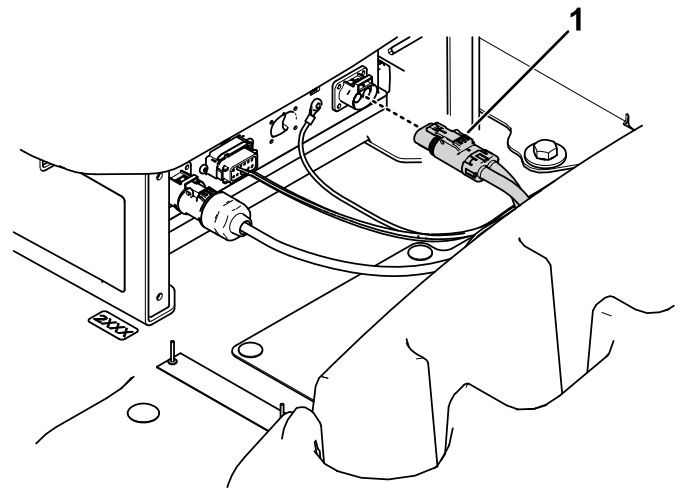


Figure 13

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1. DC power connector

Using Toro DIAG to Configure the Battery Settings

1. Connect Toro DIAG to the machine; refer to the Toro DIAG Commercial Product *User's Guide*.
2. Ensure that the software revision level for the batteries is updated by selecting the REPROGRAM button in Toro DIAG; refer to the Toro DIAG Software *User's Guide*.
3. Turn the battery-disconnect switch to the ON position.
4. Within Toro DIAG, select PRIMARY CONTROLLER, navigate to the CONFIG tab, then enter number of batteries that are equipped on the machine in the NUMBER OF BATTERIES field.
5. Disconnect Toro DIAG from the machine.

Verifying the Battery Settings

1. Turn the battery-disconnect switch to the OFF position.
2. Install the DC power connector to the charger (Figure 13).
3. Install the charger-cable cover (Figure 12).
4. Turn the battery-disconnect switch to the ON position.
5. Charge the batteries; refer to your machine *Operator's Manual*.
6. Perform the following steps to verify the number of active batteries on the machine:
 - A. Use the machine display screen to navigate to the DIAGNOSTICS menu.

- B. Navigate to the BATTERIES menu item, select OUTPUTS, then select NUMBER OF PACKS.
- C. Verify that the number shown in the NUMBER OF PACKS screen matches the number of batteries that are equipped on the machine.

6

Completing the Installation

No Parts Required

Procedure

1. Verify that the battery-disconnect switch is in the ON position.
2. Verify that there are no fault codes displayed on the machine display.
 - If the display shows a U1311 fault code, the battery software does not match the machine software and the software needs to be reprogrammed using the current release of Toro DIAG.
 - If the display shows a U1151 fault code, the number of batteries on the machine does not match the amount of batteries that were configured in Toro DIAG. Connect the machine to Toro DIAG and ensure that the number of batteries on the machine matches the amount of batteries listed in Toro DIAG.

Refer to your authorized Toro distributor for any needed assistance.



Count on it.