

Safety

- Always follow the vehicle manufacturer's recommendations relating to system installation.
- Due to the variety of equipment that can be installed using the undercarriage, ensure that the gross-vehicle-weight rating (GVWR) is not exceeded at any time. You may need to weigh the vehicle and add ballast or limit the payload of the vehicle to compensate.

Determining Your Installation

The undercarriage comes with 2 different sized brackets. Use [Figure 1](#) to determine which installation procedure you should use.

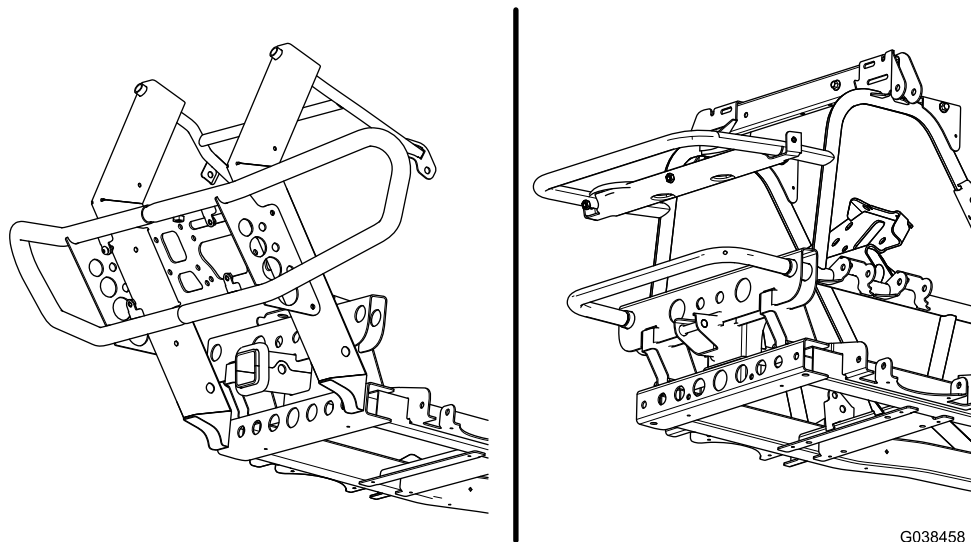


Figure 1

If your frame matches the left image, follow the steps in [Installing the Short Bracket Undercarriage \(page 2\)](#). If your frame matches the right image, follow the steps in [Installing the Long Bracket Undercarriage \(page 3\)](#).

Installing the Short Bracket Undercarriage

Note: You will not use the long brackets, upper bracket, and some of the fasteners in this installation.

1. Remove the 2 bolts securing the lower bumper to the frame.
2. Loosen the 2 bolts on the upper bumper, and rotate the bumper until there is a 2.5 cm (1 inch) gap between it and the frame.
3. Line up the undercarriage skid plate with the vehicle frame and mark the back of it on the vehicle skid plate.
4. Cut the vehicle skid plate along the mark and remove the front section.
5. Using 4 large U-bolts and 8 locknuts (3/8 inch), loosely attach the undercarriage skid plate to the vehicle frame (Figure 2).

Note: Do not tighten the fasteners at this time.

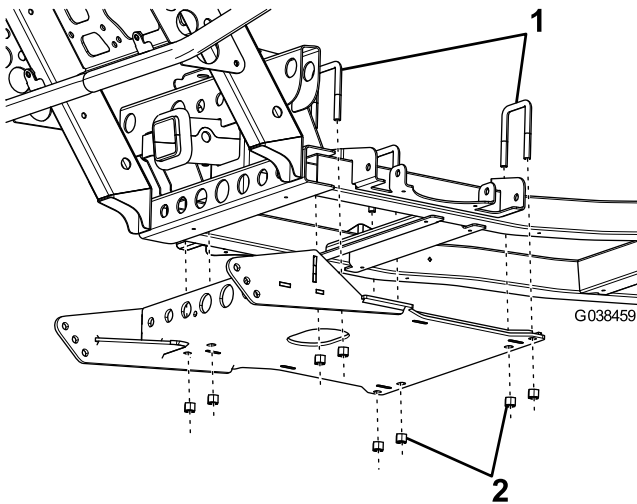


Figure 2

1. Large U-bolts
2. Locknuts (3/8 inch)

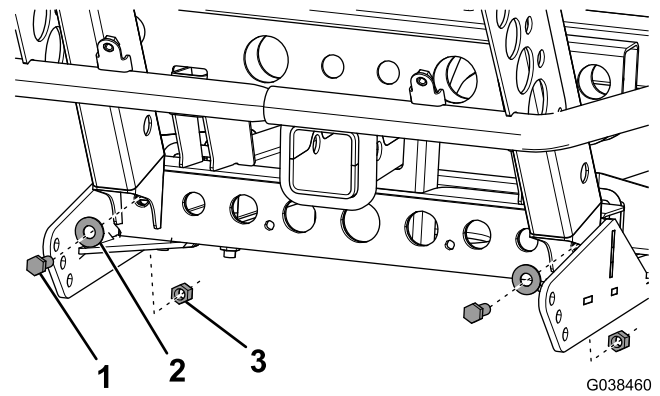


Figure 3

1. Hex-head bolt (3/8 x 1 inch)
2. Washer
3. Locknut (3/8 inch)

7. Mount the short brackets to the vehicle frame using the 2 existing bolts and nuts, 2 hex-head bolts (5/8 inch), and 2 locknuts (5/8 inch) as shown in Figure 4.

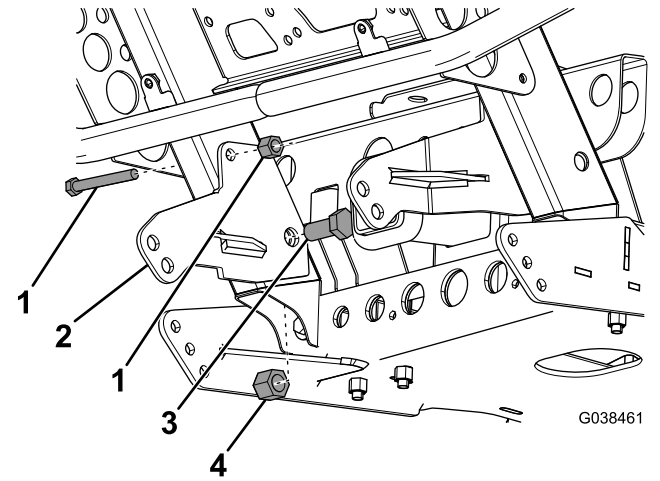


Figure 4

1. Existing fastener
2. Short bracket
3. Hex-head bolt (5/8 inch)
4. Locknut (5/8 inch)

6. Loosely secure the front of the skid plate to the vehicle frame using 2 hex-head bolts (3/8 x 1 inch), 2 washers, and 2 locknuts (3/8 inch) as shown in Figure 3.

Note: Do not tighten the fasteners at this time.

8. Secure the pushbeam to the brackets using 4 bolts (1/2 inch) and 4 locknuts (1/2 inch) as shown in Figure 11. Torque the bolts to 31 N·m (23 ft-lb).

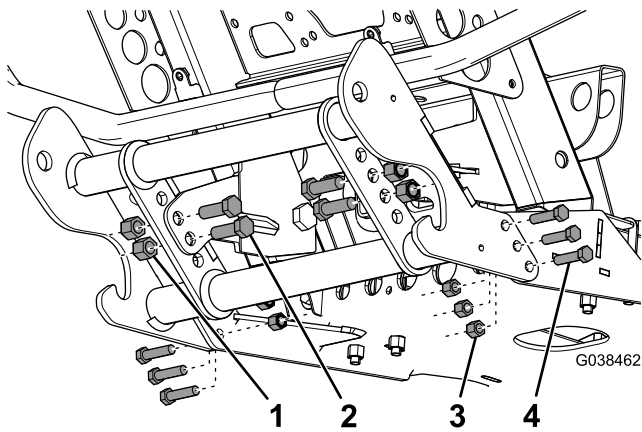


Figure 5

- | | |
|-----------------------|----------------------------|
| 1. Locknut (1/2 inch) | 3. Locknut (3/8 inch) |
| 2. Bolt (1/2 inch) | 4. Bolt (3/8 x 1-1/2 inch) |

- Secure the pushbeam to the vehicle frame using 6 bolts (3/8 x 1-1/2 inch) and 6 locknuts (3/8 inch) as shown in [Figure 11](#). Torque the bolts to 76 N·m (56 ft-lb).
- Torque all of the skid plate bolts to 31 N·m (23 ft-lb).
- Torque the 5/8 inch bolts on the short brackets to 153 N·m (113 ft-lb).

- Loosely secure the front of the skid plate to the vehicle frame using 2 hex-head bolts (3/8 x 1 inch), 2 washers, and 2 locknuts (3/8 inch) as shown in [Figure 7](#).

Note: Do not tighten the fasteners at this time.

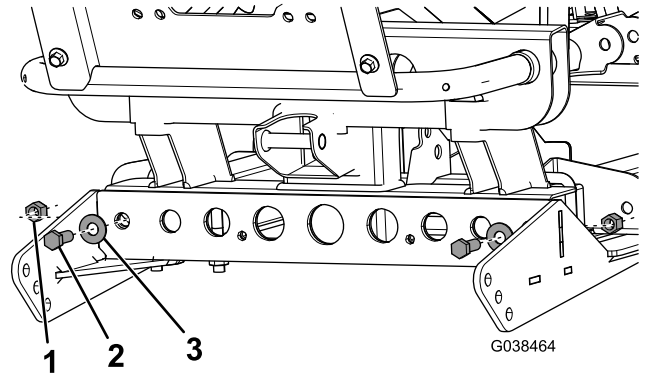


Figure 7

- | | |
|---------------------------------|-----------|
| 1. Locknut (3/8 inch) | 3. Washer |
| 2. Hex-head bolt (3/8 x 1 inch) | |

- Using the long brackets as a guide, mark and cut out 2 squares on the lower bumper housing, as shown in [Figure 8](#).

Installing the Long Bracket Undercarriage

Note: You will not use the short brackets in this installation.

- Remove the lower bumper housing.
- Line up the undercarriage skid plate with the vehicle frame and mark the back of it on the vehicle skid plate.
- Cut the vehicle skid plate along the mark and remove the front section.
- Using 4 large U-bolts and 8 locknuts (3/8 inch), loosely attach the skid plate to the vehicle frame ([Figure 6](#)).

Note: Do not tighten the fasteners at this time.

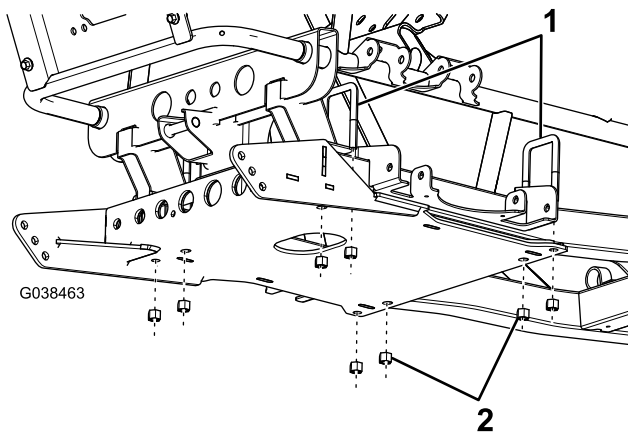


Figure 6

- | | |
|------------------|------------------------|
| 1. Large U-bolts | 2. Locknuts (3/8 inch) |
|------------------|------------------------|

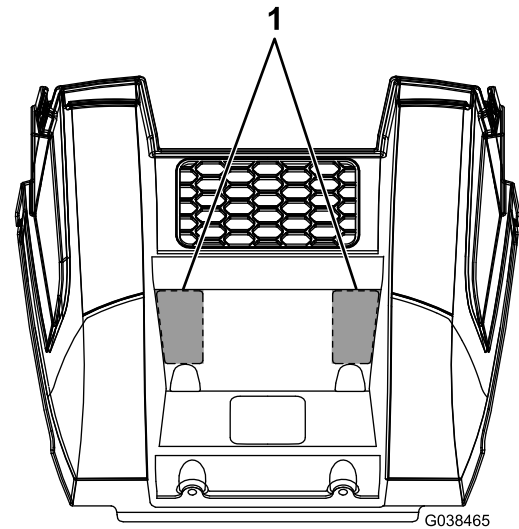


Figure 8

- Cut out

- Install the previously removed lower bumper housing.

Note: The housing goes over the skid plate.

- Loosely secure the upper bracket to the vehicle using 4 small U-bolts and 8 locknuts (5/16 inch) as shown in [Figure 9](#).

Note: Do not tighten the fasteners at this time.

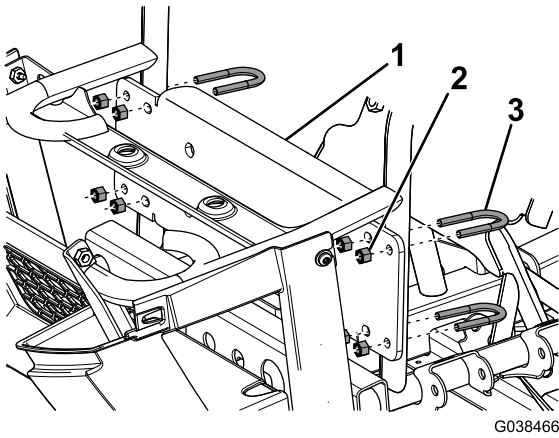


Figure 9

- 1. Upper bracket
- 2. Locknut (5/16 inch)
- 3. Small U-bolt

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- 9. Insert the long brackets through the holes in the lower bumper housing from behind.
 - 10. Secure the long brackets to the upper bracket using 4 bolts (1/2 inch) and 4 locknuts (1/2 inch) as shown in [Figure 10](#).

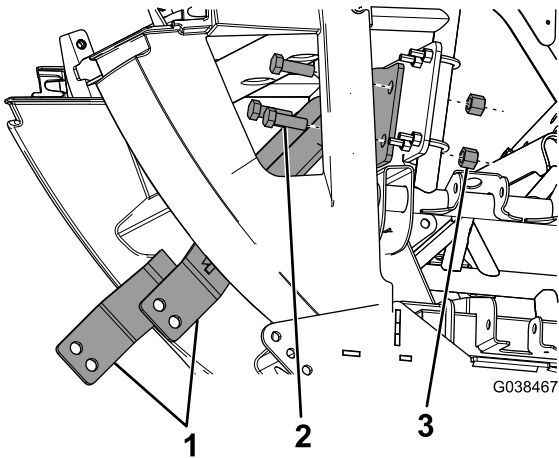


Figure 10

- 1. Long brackets
- 2. Bolt (1/2 inch)
- 3. Locknut (1/2 inch)

-
- 11. Secure the pushbeam to the brackets using 4 bolts (1/2 inch) and 4 locknuts (1/2 inch) as shown in [Figure 11](#). Torque the bolts to 31 N·m (23 ft-lb).

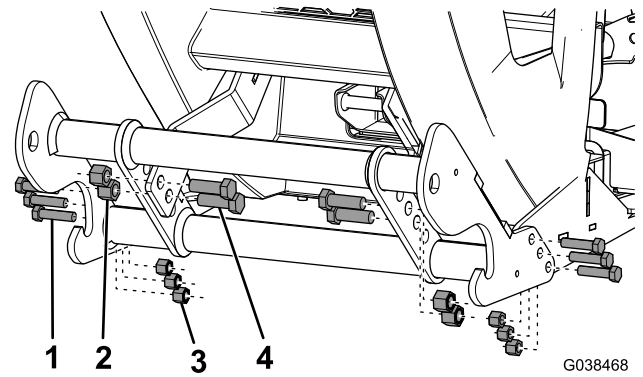


Figure 11

- 1. Bolt (3/8 x 1-1/2 inch)
- 2. Locknut (1/2 inch)
- 3. Locknut (3/8 inch)
- 4. Bolt (1/2 inch)

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- 12. Secure the pushbeam to the vehicle frame using 6 bolts (3/8 x 1-1/2 inch) and 6 locknuts (3/8 inch) as shown in [Figure 11](#). Torque the bolts to 76 N·m (56 ft-lb).
 - 13. Torque all of the skid plate bolts to 31 N·m (23 ft-lb).
 - 14. Torque the U-bolts on the upper bracket to 153 N·m (113 ft-lb).
 - 15. Torque the 1/2 inch bolts on the long brackets to 76 N·m (56 ft-lb).