Form No. 3379-250 Rev A

Boom Mounting Kit

for Multi-Pro® 1200, 1250, and 5700-D Turf Sprayers, Model Year 2004 and Up

Model No. 41323—Serial No. 290000001 and Up

Installation Instructions

⚠ 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.

⚠ WARNING

This kit requires parts to be welded to the frame. Welding can expose you to a number of hazards, including toxic fumes, smoke, dust, burns, fires, explosions, electric shock, radiation, noise, and heat stress, which can cause serious injury and death.

- **Ensure that the person performing the welding is adequately trained to do so.**
- **Ensure that the area is adequately ventilated and that suitable fire-extinguishing equipment is readily available.**
- **Weld in a fire-safe workplace. Weld behind fire-safe barriers or curtains and on concrete or other fire-safe flooring. Remove or protect all combustibles from ignition sources.**
- **Wear proper protective clothing when welding, such as fire-retardant coveralls. Protect your hands with leather gauntlet gloves. Wear high-top leather shoes, preferably safety shoes.**
- **Protect your eyes when welding. A welding helmet or hand shield with filter plate and cover plate is mandatory to protect the eyes while welding. Wear transparent goggles or safety glasses at all times.**

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

Note: The following procedure, at times, will require 2 people to perform. An overhead hoist can be used as well.

Note: For more information on how to install this kit, refer to the *Parts Catalog* and the *Service Manual*.

Note: The installation of existing sprayer kits (Foam Marker Kit, Hose Reel Kit, etc.) to the newly modified boom system may require additional parts or updated kits. Contact your Authorized Toro Dealer for additional information.

8111 Lyndale Avenue South
Bloomington, MN 55420

Register at www.Toro.com.

CE

Original Instructions (EN)
Printed in the USA

3379-250 A

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 lost.

114-9576

1. Pinch point, hand—keep hand away from hinge.

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 tank assembly.
3	No parts required	–	Remove the installed boom system.
4	Weld plate Bolt (1/2 x 1 inch) Jam nut (1/2 inch)	2 2 2	Install the weld plates.
5	Wiring harness Cable tie	1 5	Install the electrical harness.
6	Boom upright, right side Boom upright, left side Frame wedge Boom frame bolt Roll pin	1 1 2 2 2	Install the new boom uprights.
7	Mounting bar Bolt (5/16 x 3/4 inch) Locknut (5/16 inch) Valve bracket support Valve bracket, top Foam strip	1 3 3 1 1 1	Transfer the valve assembly (1250 and 5700 turf sprayers only).
8	Center boom assembly Boom transport cradle Bolt (3/8 x 1-1/4 inches) Spacer Locknut (3/8 inch) Flange bolt (1/2 x 1-1/4 inches) Flange nut (1/2 inch) Left boom extension Right boom extension Extension boom supply hose Center boom supply hose	1 2 14 8 14 4 4 1 1 2 1	Install the boom assembly.
9	Hose clamp	6	Connect the boom hoses.
10	No parts required	–	Check the boom hinge springs.
11	No parts required	–	Adjust the booms to level.
12	Parts Catalog	1	Complete the setup.

1

Preparing the Machine

No Parts Required

Procedure

Use the *Service Manual* and *Parts Catalog* to help prepare the machine for the installation of this kit as follows:

Drain and rinse the main tank assembly to prepare it for removal. Flush the system thoroughly (3 times is recommended) to eliminate direct contact with chemicals while working on the machine.

⚠ CAUTION

Chemicals are hazardous and can cause personal injury.

- **Read the directions on the chemical labels before handling the chemicals and follow all manufacturer recommendations and precautions.**
- **Keep chemicals away from your skin. Should contact occur, wash the affected area thoroughly with soap and clean water.**
- **Wear goggles and any other protective equipment recommended by the chemical manufacturer.**

2

Removing the Tank Assembly

No Parts Required

Procedure

1. Disconnect the hoses connecting the spray tank to the machine.
2. Inventory and mark all hoses and connections for later installation.
3. Remove the long bolts and fasteners securing the tank straps to the tank saddles.
4. Using an overhead lift, secure the main tank assembly.

   Note: Raise it off the frame a few inches and ensure that the tank assembly is fully disconnected. Disconnect any hose still attaching the tank to the machine.
5. Raise the tank assembly off the frame and place it aside.
6. Remove the fasteners securing the front and rear tank saddles to the frame, and remove the saddles.
7. Retain all parts and fasteners for later installation.

3

Removing the Installed Boom System

No Parts Required

Procedure

Prepare the boom assembly for removal by securing it with an overhead hoist. Use the following instructions to allow the assembly to be removed in whole.

1. Disconnect the negative battery cable.
2. Disconnect all the electrical connections to the booms, the extensions, and the valve assembly.
3. Remove the hose clamps securing the boom supply hoses to the valve assembly.
4. Remove the hoses, and retain any fittings for connecting the hose to the valve assembly.

   ⚠ CAUTION

   Chemicals are hazardous and can cause personal injury.

   - **Read the directions on the chemical labels before handling the chemicals and follow all manufacturer recommendations and precautions.**
   - **Keep chemicals away from your skin. Should contact occur, wash the affected area thoroughly with soap and clean water.**
   - **Wear goggles and any other protective equipment recommended by the chemical manufacturer.**

   Note: Remove the boom supply hoses with caution. The hoses can retain fluid which may have chemicals present.
5. Loosen the boom frame bolts by no more than 3 revolutions (Figure 1).

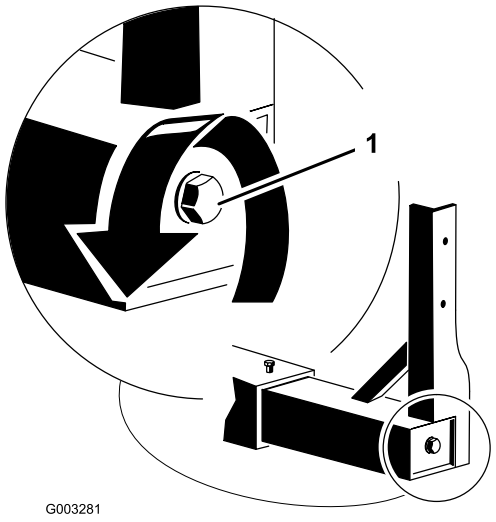

Figure 1

1. Boom-frame bolt

6. Using a plastic or rubber mallet, tap the upright to back the frame out (Figure 2).

   Important: Do not loosen the frame bolt more than 3 turns at a time. The wedge inside the boom frame sleeve can separate from the upright and prevent the proper installation of the new upright.

7. Repeat steps 5 and 6 until the boom-frame uprights break free.

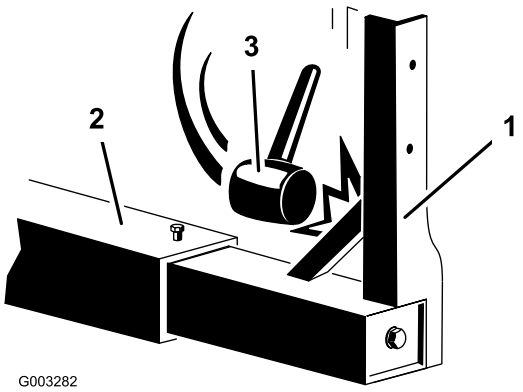

Figure 2

1. Boom-frame upright
2. Boom-frame sleeve
3. Mallet

8. Remove the boom assembly, and set it aside to allow room to install the new boom assembly.

Note: Retain all parts. Some fasteners and parts of the old boom assembly will be used for installing the new booms.

4

Installing the Weld Plates

Parts needed for this procedure:

2	Weld plate
2	Bolt (1/2 x 1 inch)
2	Jam nut (1/2 inch)

Procedure

Note: This procedure applies to earlier machines. Newer machines have factory-installed weld nuts.

1. Line up a weld plate with the end of the frame (Figure 3), and use a transfer punch to mark the center hole of the plate.

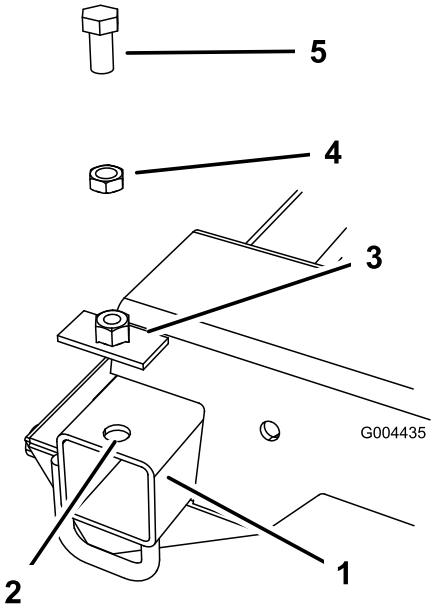

Figure 3

1. Frame
2. Drilled hole
3. Weld plate
4. Jam nut (1/2 inch)
5. Bolt (1/2 x 1 inch)

2. Remove the plate from the frame, and drill a pilot hole in the top of the boxed frame tube at the spot marked by the punch (Figure 3). Enlarge the diameter of the hole to between 1/2 and 5/8 inch.

3. Place the plate over the drilled hole in the frame, and secure it into place using the bolt (1/2 x 1 inch) and jam nut (1/2 inch); refer to Figure 4.

   Note: Doing this will hold the plate in place during welding and ensure proper alignment with the hole that you drilled previously.

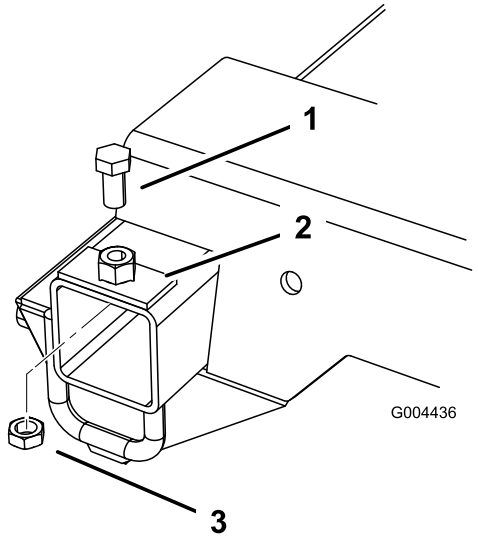

Figure 4

1. Bolt (1/2 x 1 inch)
2. Weld plate
3. Jam nut (1/2 inch)

4. Weld the new plate to the frame with a 1/4 inch fillet on the left and right sides of the plate (Figure 5). After the bolt and jam nut have cooled, remove them.

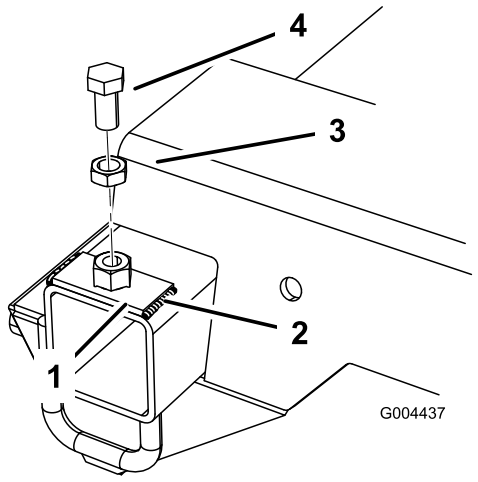

Figure 5

1. Weld plate
2. Weld
3. Jam nut (1/2 inch)
4. Bolt (1/2 x 1 inch)

Note: Do not allow the weld to partially block the opening of the boxed frame tube. This could prevent the boom uprights from fitting into the frame tube.

5. Repeat the procedure for the other side of the frame.

5

Installing the Electrical Harness

Parts needed for this procedure:

1	Wiring harness
5	Cable tie

Procedure

Installing the Electrical Harness (1200 Series Turf Sprayers)

1. Remove the seat assembly and the console assembly. Refer to the *Service Manual* for additional information.

   Note: When removing the console assembly, keep the control panels and the electrical wiring-harness connections intact.

   A. Remove the seat and pins.

   B. Lift the seat base from the machine.

   C. Remove the shift-selector knob, jam nut, and screws securing the shift boot assembly to the fenders.

   D. Remove the shift boot assembly.

   E. Remove the fasteners securing the control panel to the console assembly.

   Note: Do not disconnect the wiring connections from the control-panel components.

   F. Drop the panel through the openings in the console assembly when removing it.

   G. Remove and retain the fasteners for the console, and lift the console away.

2. Disconnect the existing connectors for the boom lift switches.
3. Connect the box connectors labeled **left** and **right** boom lift switch to the corresponding switches in the control panel.
4. Route the wiring harness down through the engine compartment and rearward.
5. Install the ring terminal of the black wire to the negative ground bolt or the ground block.
6. Install the ring terminals of the 2 red wires to the auxiliary side of the solenoid.
7. Route the remaining harness rearward, along the frame, with the existing wiring.
8. Use cable ties to secure the wiring harness to the existing wiring in the seat compartment and along the frame.

9. Install the seat and console components as follows:
   A. Install the console while lifting the control panels up through the openings in the console assembly.
   B. Secure the console to the frame using the fasteners removed previously.
   C. Secure the control panels to the console using the fasteners removed previously.
   D. Replace the shift boot assembly, jam nut and knob.
   E. Install the seat to the frame, and secure it with the pin and cotter that you removed previously.
10. At the rear of the machine, route the new connectors to the right and the left as labeled.

    Note: If needed, locate the old actuator connectors and tie them back, out of the way.

Installing the Electrical Harness (5700 Turf Sprayers)

1. Lift the operator's seat up, and remove the fastener securing the control panel.

   Note: Do not disconnect the wiring connections from the control-panel components.
2. Install the wire harness up into the control-panel housing.
3. Disconnect the existing connectors for the boom lift switches.
4. Connect the box connectors labeled **left** and **right** boom lift switch to the corresponding switches in the control panel.
5. Route the wiring harness down into the engine compartment and rearward.
6. Install the control panel and secure it into place.
7. Install the ring terminal of the black wire to the negative ground bolt or the ground block.
8. Install the ring terminals of the 2 red wires to the auxiliary side of the solenoid.
9. Route the remaining harness rearward, along the frame, with the existing wiring.
10. Use cable ties to secure the wiring harness to the existing wiring in the seat compartment and along the frame.
11. At the rear of the machine, route the new connectors to the right and the left as labeled.

    Note: If needed, locate the old actuator connectors and tie them back, out of the way.

6

Installing the New Boom Uprights

Parts needed for this procedure:

1	Boom upright, right side
1	Boom upright, left side
2	Frame wedge
2	Boom frame bolt
2	Roll pin

Procedure

1. Assemble the frame bolt through the upright and into the frame wedge (Figure 6).

   Note: Repeat this step for the opposite boom upright.

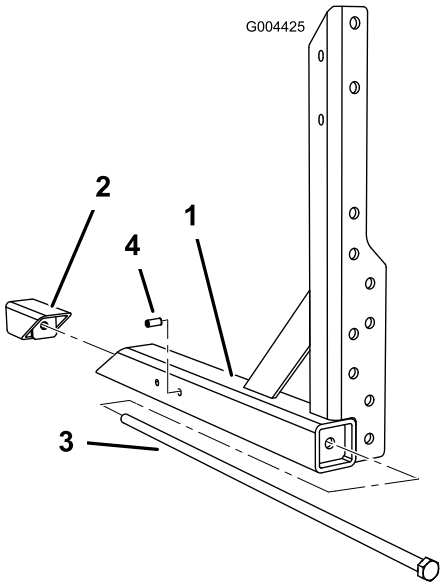

Figure 6
Left Boom Upright

1. Frame upright
2. Wedge
3. Boom frame bolt
4. Roll pin (5700 Turf Sprayers only)

2. For 5700 turf sprayers, install a roll pin into the outside hole, closest to the angle support (Figure 6).

   Note: Repeat this step for the opposite boom upright.
3. Install the new boom uprights into the frame.
   A. For 1200 series turf sprayers, insert the upright into the frame until the end of the frame is 19-1/4 inches from the base of the axle housing on the frame (Figure 7).

B. For 5700 turf sprayers, insert the boom until the roll pin that you previously installed stops against the frame.

For all machines, retain each boom upright with a bolt (1/2 x 1 inch) in the weld nut or the weld plate that you previously installed, and secure the bolt with a jam nut (1/2 inch).

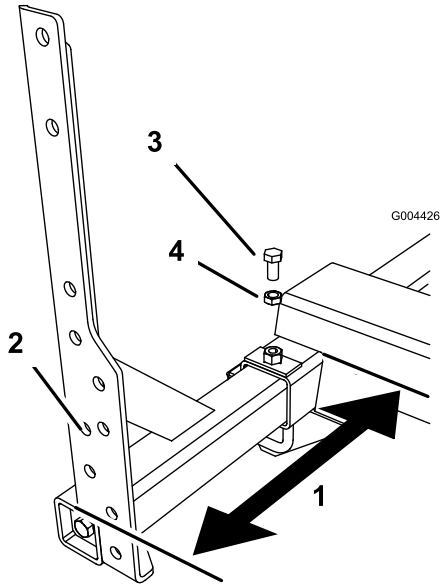

Figure 7

1. 19-1/4 inches
2. Boom upright
3. Retaining bolt
4. Jam nut

4. Tighten the boom-frame bolts (Figure 8). Torque the bolts to 91 to 113 N-m (67 to 83 ft-lb).

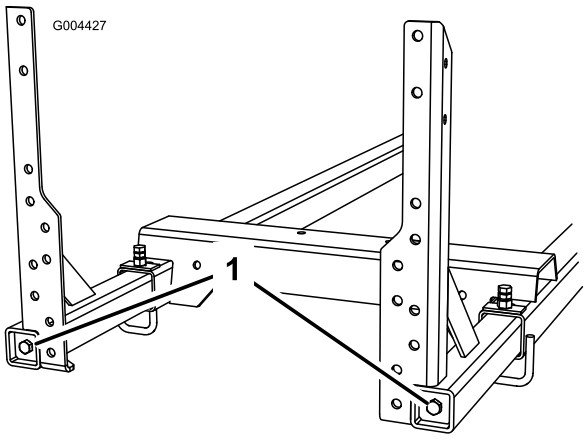

Figure 8

1. Boom-frame bolts

7

Transferring the Valve Assembly (1250 and 5700 Turf Sprayers Only)

Parts needed for this procedure:

1	Mounting bar
3	Bolt (5/16 x 3/4 inch)
3	Locknut (5/16 inch)
1	Valve bracket support
1	Valve bracket, top
1	Foam strip

Procedure

⚠ CAUTION

Chemicals are hazardous and can cause personal injury.

- **Read the directions on the chemical labels before handling the chemicals and follow all manufacturer recommendations and precautions.**
- **Keep chemicals away from your skin. Should contact occur, wash the affected area thoroughly with soap and clean water.**
- **Wear goggles and any other protective equipment recommended by the chemical manufacturer.**

Removing the Valve Assembly from 1250 Turf Sprayers

1. Remove the hose clamps securing the boom supply hoses from the valve assembly.
2. Remove the boom supply hoses from the valve assembly

   Note: Remove the boom supply hoses with caution. The hose can retain fluid, which may contain chemicals.
3. Cut away any plastic ties securing the valve assembly and wiring harness to the cross bar.
4. Remove and retain any fasteners securing the valve assembly to the cross bar between the uprights.
5. Remove valve assembly from the cross bar between the uprights.

Removing the Valve Assembly from 5700 Turf Sprayers

1. Remove the hose clamps securing the boom supply hoses from the valve assembly.
2. Remove the boom supply hoses from the valve assembly.

   Note: Remove the boom supply hoses with caution. The hose can retain fluid, which may contain chemicals.
3. Remove the fasteners securing the bracket and valve assembly to the upper and lower cross bars.
4. Remove the bracket and valve assembly.
5. Retain all fasteners.
6. Remove the fasteners securing the upper and lower cross bars to the old uprights. Remove the crossbars and retain all the fasteners. Both cross bars will be used again.
7. Disassemble the bracket.
8. Remove the valve assembly and the tee valve from the lower half of the bracket.
9. Retain the fasteners and the valve assembly, and discard the bracket.

Installing the Valve Assembly on 1250 Turf Sprayers

1. Install the new cross bar to the valve uprights by using the fasteners that you previously removed (Figure 9).

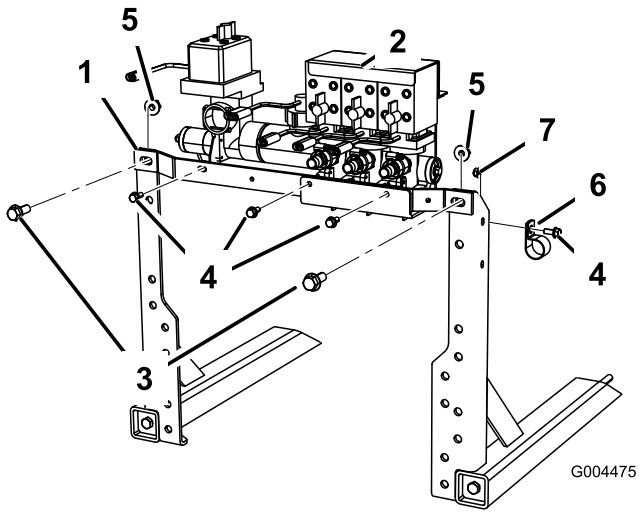

Figure 9

1. Crossbar
2. Valve assembly
3. Bolt, existing
4. Bolt (5/16 x 3/4 inch)
5. Locknut, existing
6. R-clamp
7. Locknut (5/16 inch)

2. Secure the valve assembly to the bar using 3 bolts (5/16 x 3/4 inch); refer to Figure 9.
3. Install the hose clamp to the right boom upright (Figure 9).
4. Connect the hoses from the machine to the valve assembly.
5. Connect the electrical connections from the main wiring harness that you previously disconnected from the valve assembly.

Installing the Valve Assembly on 5700 Turf Sprayers

1. Install the lower crossbar that you removed from the old boom uprights using the existing fasteners (Figure 10).

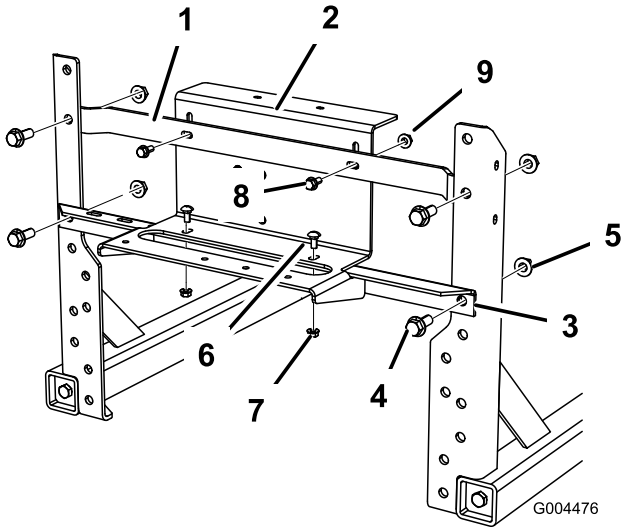

Figure 10

1. Upper cross bar
2. Valve bracket support
3. Lower cross bar
4. Bolt, existing
5. Locknut, existing
6. Carriage bolt, existing
7. Locknut, existing
8. Bolt (5/16 x 3/4 inch), existing
9. Locknut (5/16 inch), existing

2. Install the new valve bracket support to the lower cross bar using existing carriage bolts and fasteners.
3. Install the upper cross bar to the uprights and the bracket support.

   Note: Secure it to the uprights with 2 bolts (5/16 x 3/4 inch) and 2 locknuts (5/16 inch). Secure the bracket to the upper cross bar with the existing fasteners.
4. Install the previously removed tee valve to the backside of the valve support bracket using the existing fasteners.
5. Secure the valve assembly to the valve bracket support using the fasteners that you previously removed (Figure 11).

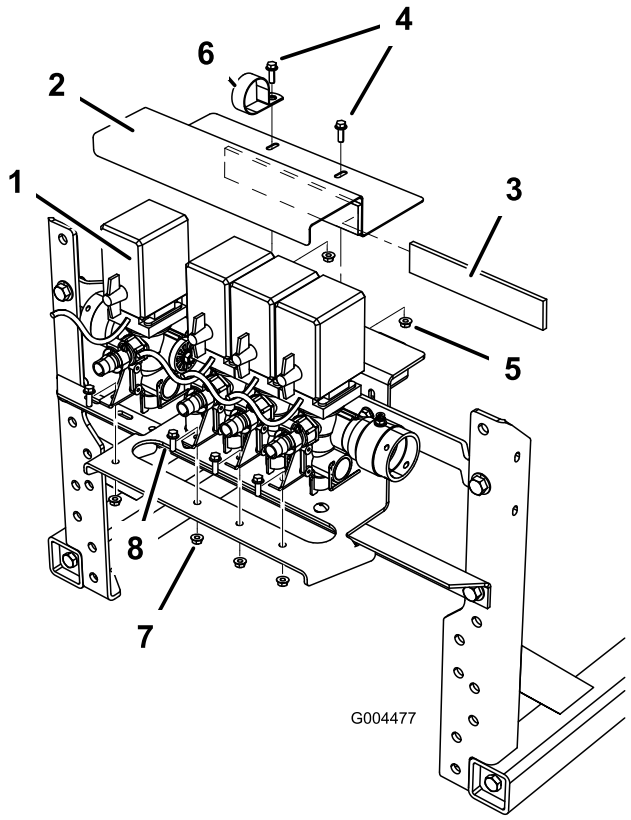

Figure 11

1. Valve assembly
2. Upper valve bracket
3. Foam strip
4. Bolt
5. Locknut
6. R-clamp
7. Locknut
8. Bolt

6. Install the foam strip to the upper valve bracket (Figure 11).
7. Install the upper valve bracket to the valve support bracket, closing around the valve assembly. Secure the brackets using the existing fasteners and the new R-clamp.
8. Connect the tagged hoses removed previously to the valve assembly.
9. Connect the electrical connections from the main wiring harness that you previously disconnected from the valve assembly.

8

Installing the Boom Assembly

Parts needed for this procedure:

1	Center boom assembly
2	Boom transport cradle
14	Bolt (3/8 x 1-1/4 inches)
8	Spacer
14	Locknut (3/8 inch)
4	Flange bolt (1/2 x 1-1/4 inches)
4	Flange nut (1/2 inch)
1	Left boom extension
1	Right boom extension
2	Extension boom supply hose
1	Center boom supply hose

Procedure

1. Install the boom transport cradles to the center boom assembly using 6 bolts (3/8 x 1-1/4 inches) and 6 locknuts (3/8 inch) as shown in Figure 12.

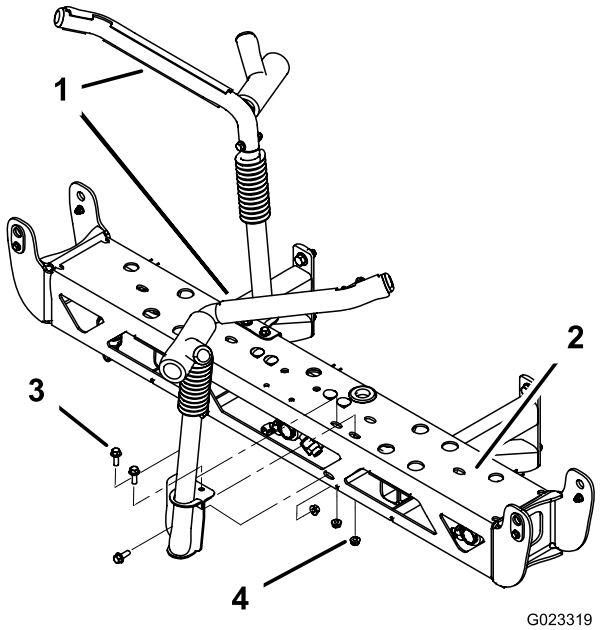

Figure 12

1. Boom transport cradle
2. Center boom assembly
3. Bolt (3/8 x 1-1/4 inches)
4. Locknut (3/8 inch)

2. Refer to Figure 13 to locate the appropriate mounting holes for installing the center boom on your machine.

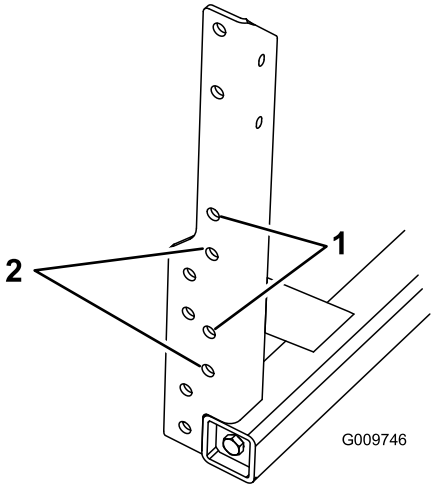

Figure 13

Right side boom frame upright shown

1. Mounting holes for 1200 series turf sprayers
2. Mounting holes for 5700 turf sprayers

Note: The upper set of holes are for booms designed for nozzles 20 inches off the ground. You can use the lower set of holes to mount the booms so that the nozzles are 18 inches off the ground.

3. Install the center boom assembly to the uprights using 4 flange bolts (1/2 x 1-1/4 inches) and 4 flange nuts (1/2 inch) (Figure 14).

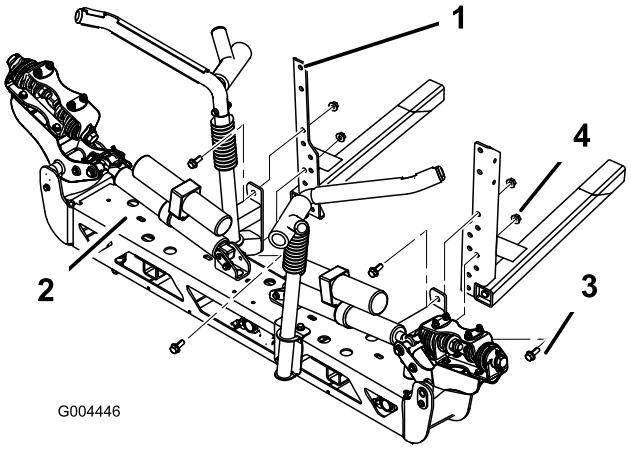

Figure 14

1200 series turf sprayers installation shown

1. Boom upright
2. Center boom
3. Flange bolt (1/2 x 1-1/4 inches)
4. Flange nut (1/2 inch)

4. Make the electrical connections for the boom actuators to the newly routed connectors.
5. Power-on the system and use the boom lift switches to extend the boom actuator rods. This allows you to install the left and right boom extensions.
6. Remove the 4 bolts, 4 washers and 4 nuts on the hinge plate.
7. Install the extension boom to the center boom at the hinge plate using the 4 bolts, 4 washers, and 4 nuts that you removed in step 6 as shown in Figure 15.

   Note: Ensure that all spray turrets are facing the rear.

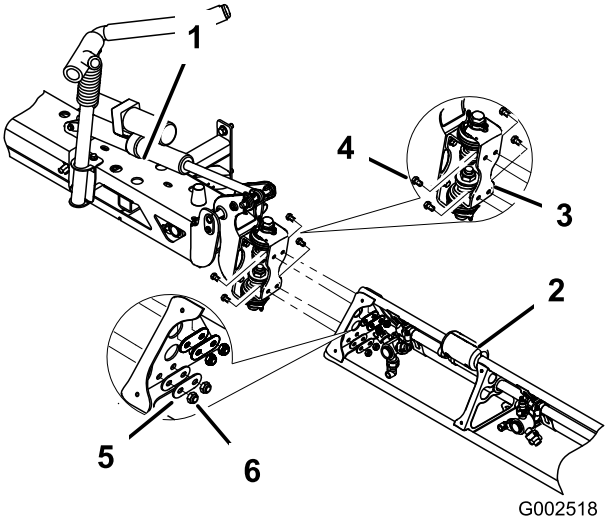

Figure 15

1. Center boom assembly
2. Boom extension
3. Hinge plate
4. Bolt
5. Washer
6. Nut

8. Repeat step 7 on the other side of the center boom assembly with the opposing boom extension.

   Note: Ensure that all spray turrets are facing to the rear.

9

Connecting the Boom Hoses

Parts needed for this procedure:

6	Hose clamp

Procedure

1200 Turf Sprayers

1. Locate the center boom supply hose coming from the front of the machine, and route the hose through the hose R-clamp installed on the right boom upright (Figure 9) and down into the hole with the grommet in the center boom assembly frame.

   Note: Use a hose clamp to secure the hose to the hose barb in the center boom assembly.

2. Route the left and right boom supply hose coming from the front of the machine to the left and right boom extensions respectively.

Note: Use the hose clamps to secure the hose to the hose barbs in the boom extensions. Secure the boom hoses to the boom frame using the R-clamp on the front side of the pivot bracket. Leave enough slack in the hose to keep the hoses from kinking when the booms are raised to the transport position.

1250 Turf Sprayers

1. Connect the center boom supply hose in loose parts to the center hose barb in the valve assembly, and secure it with a hose clamp.
2. Route the hose down into the hole with the grommet in the center boom assembly frame, and use a hose clamp to secure it to the hose barb in the center boom assembly.
3. Connect the left and right boom supply hoses in loose parts to the left and right hose barb in the valve assembly respectively.

   Note: Use the hose clamps to secure the hoses to the hose barbs.
4. Route the left and right boom supply hoses from the valve assembly to the corresponding boom extensions.

   Note: Use the hose clamps to secure the hose to the hose barbs in the boom extensions.
5. Secure the boom hoses to the boom frame using the R-clamp on the front side of the pivot bracket.

   Note: Leave enough slack in the hose to keep the hoses from kinking when the booms are raised to the transport position.

5700 Turf Sprayers

1. Connect the center boom supply hose in the loose parts to the center hose barb in the valve assembly, and secure it with a hose clamp.
2. Route the hose down into the hole with the grommet in the center boom assembly frame.
3. Use a hose clamp to secure it to the hose barb in the center boom assembly.
4. Connect the left and right boom supply hoses in loose parts to the left and right hose barb in the valve assembly respectively.

   Note: Use the hose clamps to secure the hoses to the hose barbs.
5. Route the left and right boom supply hoses from the valve assembly to the corresponding boom extensions.

   Note: Use the hose clamps to secure the hose to the hose barbs in the boom extensions.
6. Secure the boom hoses to the boom frame using the R-clamp on the front side of the pivot bracket.

   Note: Leave enough slack in the hose to keep the hoses from kinking when the booms are raised to the transport position.

10

Checking the Boom Hinge Springs

No Parts Required

Procedure

Important: Operating the spray system with the boom hinge springs under the incorrect compression could damage the boom assembly. Measure the springs and use the jam nut to compress the springs to 4 cm (1.56 inches) if necessary.

Before operating the machine, adjust the springs to the correct compression.

1. Support the booms while they are extended to the spray position.
2. At the boom hinge, measure the compression of the upper and lower springs while the booms are in their extended position (Figure 16).

   Note: All springs must be compressed until they measure 4 cm (1.56 inches).

   Note: Use the jam nut to compress any spring that measures greater than 4 cm (1.56 inches).

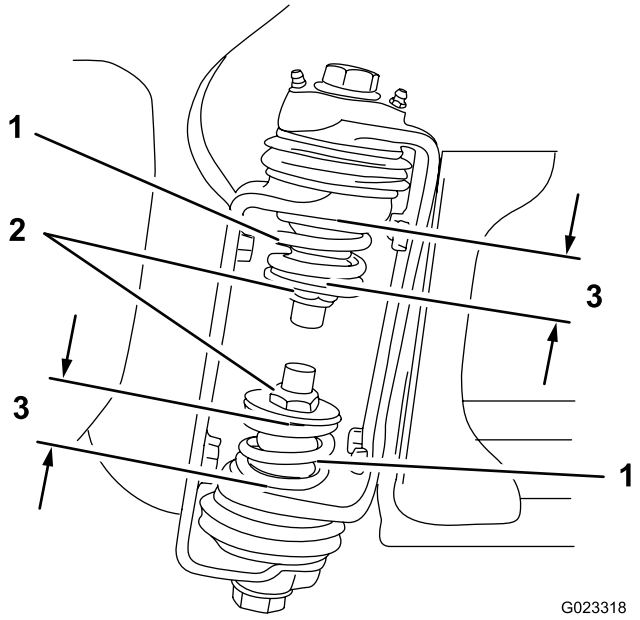

Figure 16

1. Boom-hinge spring
2. Jam nut (2)
3. 4 cm (1.56 inches)

3. Repeat the procedure for each spring on both boom hinges.

4. Move the booms into the transport "X" position; refer to Operating the Booms (page 14).

11

Adjusting the Booms to Level

No Parts Required

Procedure

1. At the operator's position, turn the ignition key to the On position to energize the system.
2. Move the booms into position so that they are level with the ground.
3. Remove the key and leave the operator's position.
4. At the hinge, adjust the position of the bumpers so that the boom cannot move past level with the ground. Make sure that the bumper is level.
5. Tighten the bolt and nut to lock the bumpers into the adjusted position.

   Note: Torque the fasteners to 183 to 223 N-m (135 to 165 ft-lb).

Note: The bumper may experience some compression over time. If the booms drop below level, use this procedure to adjust the bumper position.

12

Completing the Setup

Parts needed for this procedure:

1	*Parts Catalog*

Procedure

Note: Installing the existing sprayer kits (Foam Marker Kit, Hose Reel Kit, etc.) to the newly modified boom system may require additional parts or updated kits.

1. Transfer the nozzles from the old boom system to the new system.
2. Test the functions of the spray system.
3. Refer to your *Operator's Manual* and nozzle guide to test and calibrate for new nozzles.
4. The old boom system represents a contaminated metal. Dispose of it according to local and state regulations.
5. Keep the following documents to reference the modifications:
   - The *Parts Catalog* for this kit
   - The Operation, Maintenance, and Troubleshooting sections of these *Installation Instructions*

Operation

Operating the Booms

The boom lift switches on the sprayer control panel allows you to move the booms between the transport position and the spray position without leaving the operator's seat. It is recommended to change boom positions while the machine is stationary.

To change the boom position:

1. Stop the sprayer on level ground.
2. Use the boom lift switches to lower booms.

   Note: Wait until the booms reach the full, extended spray position.
3. When the booms need to be retracted, stop the sprayer on level ground.
4. Use the boom lift switches to raise the booms.

   Note: Raise the booms until they have moved completely into boom transport cradle forming the "X" transport position and the boom cylinders are fully retracted.

   Important: To prevent damage to the boom actuator cylinder, make sure that the actuators are fully retracted before transport.

Operating Tips

The sprayer is equipped with a boom transport cradle that has a unique safety feature. In the event of accidental boom contact with a low overhead object while in the transport position, you can push the boom(s) out of the transport cradles. If this occurs, the booms will come to rest in a near horizontal position to the rear of the vehicle. Although the booms will not be damaged due to this movement, you should immediately put them back into the transport cradle.

Important: If you transport the machine when the booms are not in the "X" transport position in the boom transport cradle, you can damage the booms.

To put the booms back into the transport cradle, move the sprayer to an area clear of bystanders and with plenty of space to allow the booms to reach the spray position.

Important: Booms that have been knocked out of the "X" transport position will swing to the spray position when the actuators are extended to lower the booms. Make sure that there is enough space around the sprayer before attempting to restore the booms.

Use the boom switches to lower the boom(s) to the spray position, and then raise the boom(s) back into the transport position. Make sure that the boom cylinders are fully retracted to prevent actuator rod damage.

Maintenance

Greasing the Boom Hinges

Service Interval: Every 100 hours—Lubricate the boom hinges.

Important: If the boom hinge is washed with water, all water and debris must be cleared from the hinge assembly and fresh grease must be applied.

Grease Type: #2 general-purpose lithium-based grease

1. Wipe the grease fittings clean so that foreign matter cannot be forced into the bearing or bushing.
2. Pump grease into the bearing or bushing at each fitting Figure 17.

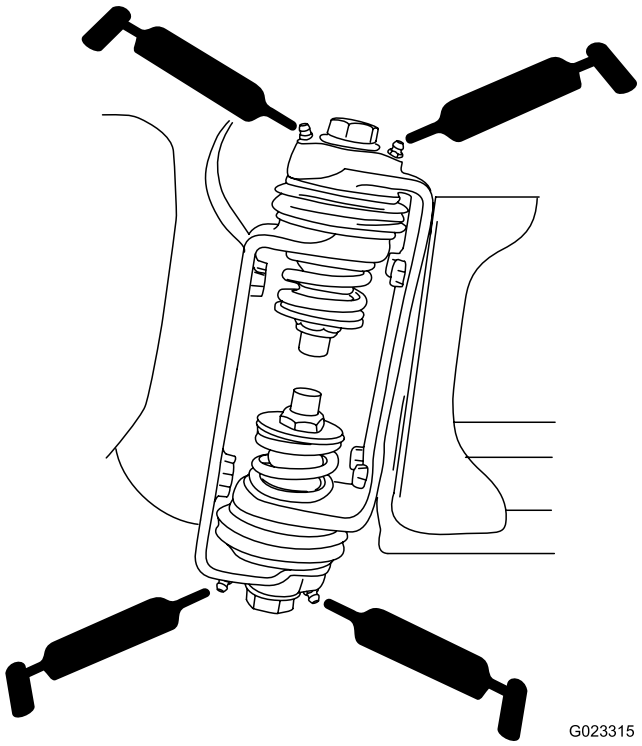

Figure 17
Right boom

3. Wipe off the excess grease.
4. Repeat the procedure for each boom pivot.

Greasing the Actuator Rod Bearings

Service Interval: Every 400 hours/Yearly (whichever comes first)—Grease the actuator rod bearings.

Grease Type: #2 general-purpose lithium-based grease

1. Extend the booms to the spray position.
2. Remove the cotter pin from the pivot pin (Figure 18).

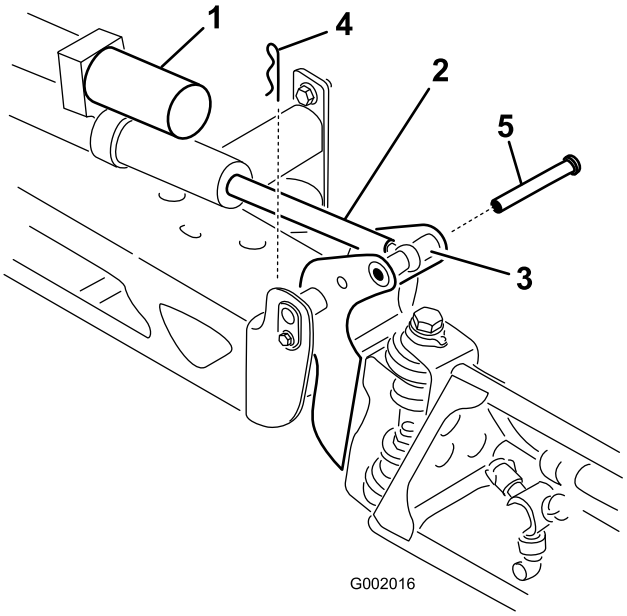

Figure 18

1. Actuator
2. Actuator rod
3. Boom pivot-pin housing
4. Cotter pin
5. Pin

3. Lift up on the boom and remove the pin (Figure 18).
4. Slowly lower the boom to the ground.
5. Inspect the pin for any damage and replace it if necessary.
6. Manipulate the actuator rod bearing end and apply grease into the bearing (Figure 19).

   Note: Wipe off the excess grease.

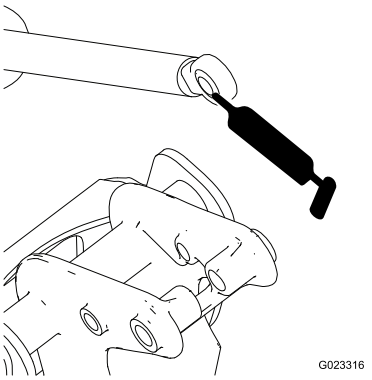

Figure 19
Right boom

7. Raise the boom to align the pivot with the actuator rod.
8. While holding the boom, insert the pin through both the boom pivot and the actuator rod (Figure 18).
9. With the pin in place, release the boom and secure the pin with the cotter pin that you removed previously.
10. Repeat the procedure for each actuator rod bearing.

Adjusting the Boom Actuators

Service Interval: Every 400 hours—Check the boom actuator hydraulic oil for air bubbles.

1. Position the sprayer on a level surface, and lower the booms into the spray position.
2. Set the parking brake, stop the pump, stop the engine, and remove the ignition key.
3. Attempt to lift the boom by applying a moderate amount of pressure (just enough to lift the boom manually) while observing the actuator rod.

   If the actuator rod exhibits an axial movement (travels into or out of the cylinder) greater than 2.16 to 2.54 mm (0.085 to 0.100 inch), you may wish to bleed the air from the hydraulic oil; refer to the *Service Manual* for instructions on how to bleed air from the actuators or contact an Authorized Toro Service Distributor.
4. Repeat the procedure for the opposing boom.

Moving the Boom Actuators Manually

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

⚠ DANGER

Using the manual relief valve may cause the boom to move suddenly and cause injury to you or others.

- **Take caution and adjust the manual relief valve slowly.**
- **Ensure that the surrounding area is clear and that no one is inside the operating range of the boom.**

⚠ CAUTION

Adjusting the manual relief valve with electrical power present could cause the actuator to operate irregularly and cause injury to you or others.

***Do not* use the manual relief valve while electrical power is being supplied to the actuator.**

In case of an emergency, such that the boom must be moved and no 12V DC power source is available, you can use the manual relief valve to relieve the pressure within the actuator and allow the booms to be moved manually.

Important: Do not loosen the manual valve more than 4 turns. Turning the valve more than 4 turns may cause the valve to come off completely, allowing hydraulic oil to spill out.

1. Locate the manual relief valve on the actuator for each boom (Figure 20).

   Note: The manual relief valve is the smaller valve and is only on one side of the actuator body.

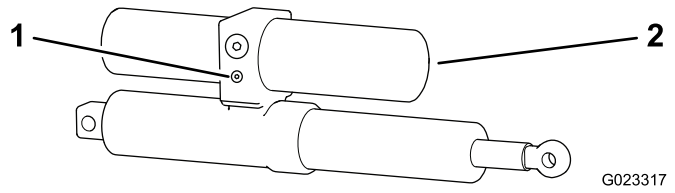

Figure 20

1. Manual relief valve
2. Actuator

   Note: Due to the opposing orientation of actuators in respect to each other, the manual relief valve is on the forward face of the left boom actuator and the rear face of the right boom actuator.

2. Use a hexagonal wrench to loosen the manual relief valve **no more** than 2 to 3 turns.

   Note: The cylinder should start stroking manually or by external pressure at this time.

3. When you recover the original position of the actuator, close the manual relief valve.

   Note: Torque the valve to 150 to 285 N-cm (13.2 to 25.2 in-lb).

Inspecting the Nylon Pivot Bushings

Service Interval: Every 400 hours/Yearly (whichever comes first)—Inspect the nylon pivot bushings.

1. Position the sprayer on a level surface, set the parking brake, stop the pump, stop the engine, and remove the ignition key.
2. Extend the booms to the spray position, and support the booms using stands or straps from a lift.
3. With the weight of the boom supported, remove the bolt and the nut securing the pivot pin to the boom assembly (Figure 21).

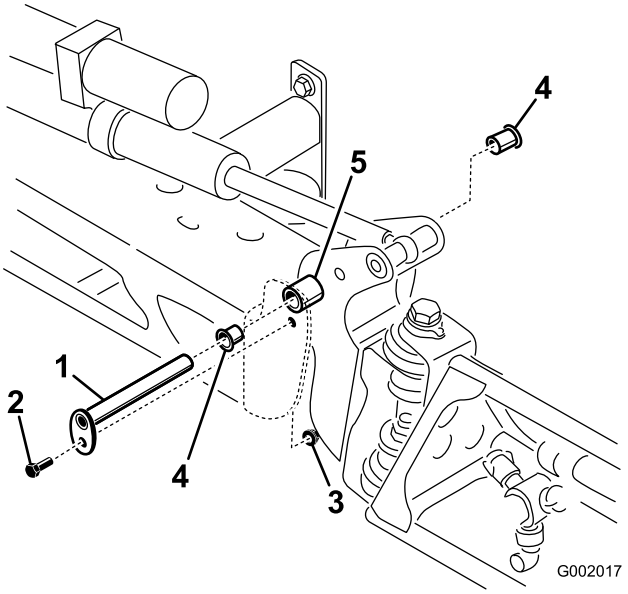

Figure 21

1. Pivot pin
2. Bolt
3. Nut
4. Nylon bushing
5. Pivot bracket

4. Remove the pivot pin.
5. Remove the boom and pivot bracket assembly from the center frame to access the nylon bushings.
6. Remove and inspect the nylon bushings from the front and back sides of the pivot bracket (Figure 21).

   Note: Replace any damaged bushings.

7. Apply a small amount of oil on the nylon bushings and install them into the pivot bracket.
8. Install the boom and pivot bracket assembly into the center frame, aligning the openings (Figure 21).

9. Install the pivot pin and secure it with the bolt and the nut that you removed previously.

Repeat steps 3 through 9 for each boom.

Troubleshooting

Troubleshooting the Spray System

Problem	Possible Cause	Corrective Action
A boom section does not spray.	1. The electrical connection on the boom valve is dirty or disconnected. 2. Blown fuse 3. Pinched hose 4. A boom by-pass valve is improperly adjusted. 5. Damaged boom valve 6. Damaged electrical system	1. Turn the valve off manually. Disconnect the electrical connector on the valve and clean all leads, then reconnect it. 2. Check the fuses and replace them as necessary. 3. Repair or replace the hose. 4. Adjust the boom by-pass valves. 5. Contact your Authorized Service Dealer. 6. Contact your Authorized Service Dealer.
A boom section does not turn off.	1. The valve is damaged.	1. Stop the spray system and pump and turn off the sprayer. Remove the retainer from under the boom valve and pull out the motor and stem. Inspect all parts and replace any that appear damaged.
A boom valve is leaking.	1. An O-ring is deteriorated.	1. Stop the spray system and pump and turn off the sprayer. Disassemble the valve and replace the O-rings.
A pressure drop occurs when you turn on a boom.	1. The boom bypass valve is improperly adjusted. 2. There is an obstruction in the boom valve body. 3. A nozzle filter is damaged or clogged.	1. Adjust the boom bypass valve. 2. Remove the inlet and outlet connections to the boom valve and remove any obstructions. 3. Remove and inspect all nozzles.
A boom actuator is not operating properly.	1. A thermal breaker in the fuse block responsible for powering the actuator has tripped due to overheating. 2. A thermal breaker in the boom actuator responsible for powering the actuator has tripped or malfunctioned.	1. Wait for the system to cool down before resuming operation. If the thermal breaker trips repeatedly, contact your Authorized Service Dealer. 2. Contact your Authorized Service Dealer.

Notes:

Count on it.