Form No. 3356-120 Rev C

Boom Mounting Kit

For Multi-Pro 1200, 1250 and 5700-D Turf Sprayers Model Year 2004-5

Model No. 41323—Serial No. 260000001 and Up

Installation Instructions

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.

- **Welding portions of the kit should be performed by a trained welder.**
- **Welding must be performed in an adequately ventilated area with suitable fire extinguishing equipment readily available.**
- **Weld in a fire-safe workplace. This can be accomplished by welding 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. Feet should be protected by 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. Transparent goggles or safety glasses should be worn 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 two people to perform. An overhead hoist can be used as well.

Note: The installation of this kit can be aided by referencing the *Parts Catalog* and *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. Please contact your Authorized Toro Dealer for additional information.

8111 Lyndale Avenue South
Bloomington, MN 55420

Register at www.Toro.com.

Original Instructions (EN)
Printed in the USA.

Installation

Loose Parts

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

Step	Description	Qty.	Use
1	No parts required	–	Preparing the machine.
2	No parts required	–	Remove the tank assembly.
3	No parts required	–	Remove the installed boom system
4	Weld plate Jam nut (1/2 inch) Bolt (1/2 x 1 inch)	2 2 2	Modify the frame.
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	No parts required	–	Install the tank assembly
8	Mounting bar Bolt (5/16 x 3/4 inch) Lock nut (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).
9	Center boom assembly Boom transport cradle Bolt (3/8 x 1-1/4 inches) Spacer Lock nut (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
10	Hose clamp	6	Connect the boom hoses
11	No parts required	–	Check the boom hinge springs.
12	Parts Catalog	1	Complete the setup.

Step 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 (three times is recommended) to eliminate direct contact with chemicals while working on the machine.

⚠

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.**

Step 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 check that tank assembly if fully disconnected. Disconnect any hose still attaching the tank to the machine if necessary.
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. Remove the saddles.
7. Retain all parts and fasteners for later installation.

Step 3

Removing Installed Boom System

No Parts Required

Procedure

Prepare the boom assembly for removal by securing it with an over head 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 booms extensions and the valve assembly.
3. Remove the hose clamps securing the boom supply hoses to the valve assembly. Remove the hoses and retain any fittings for connecting the hose to the valve assembly.

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.

4. Loosen the boom frame bolts by no more than three revolutions (Figure 1).

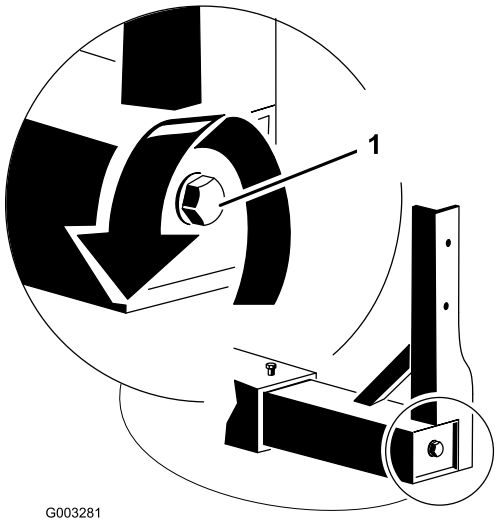

Figure 1

1. Boom frame bolt

5. Using a plastic or rubber mallet, tap the upright to back the frame out (Figure 2). Repeat steps 4 and 5 until the boom frame uprights breaks free.

Important: Do not loosen the frame bolt more than three 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.

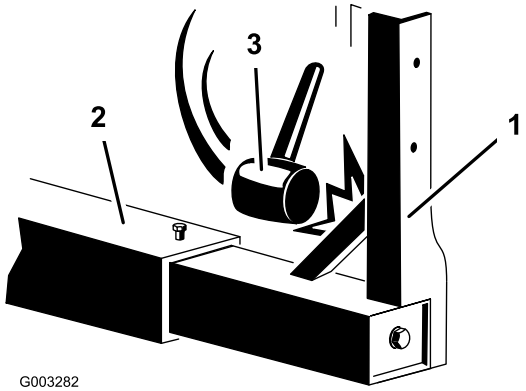

Figure 2

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

6. Remove the boom assembly and place it aside to allow room to install the new boom assembly.
7. Retain all parts. Some fasteners and parts of the old boom assembly will be used during the installation the new booms.

Step

4

Modifying Frame

Parts needed for this step:

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

Procedure

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

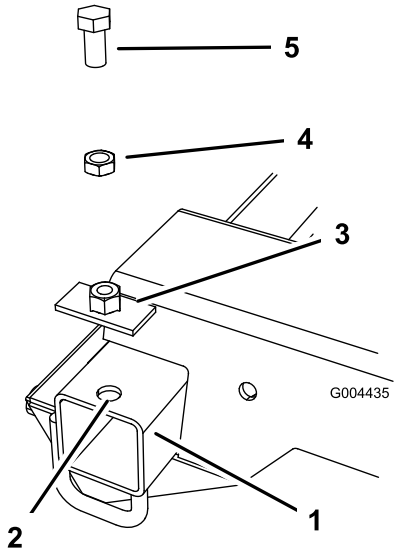

Figure 3

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

2. Drill a pilot hole in the top of the boxed frame tube at the spot marked by the punch (Figure 3). Enlarge the hole to a minimum diameter of 1/2 inch and a maximum diameter of 5/8 inch.
3. Place the plate over the drilled hole in the frame. Secure it into place using the bolt (1/2 x 1 inch) and jam nut (1/2 inch). Doing this will hold the plate in place during welding and assure proper alignment with the hole drilled previously (Figure 4).

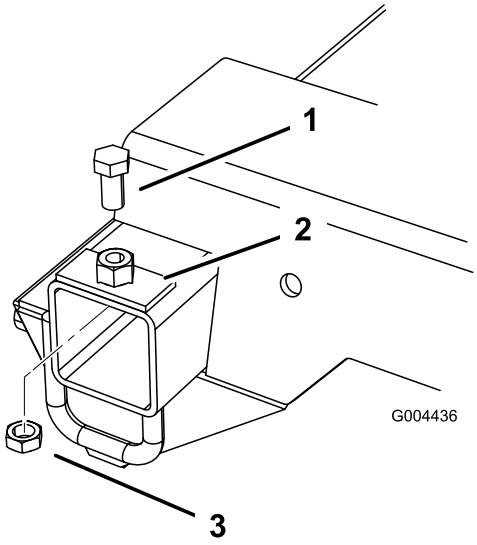

Figure 4

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

4. Weld the new plate to the frame with a quarter inch fillet on the left and right sides of the plate (Figure 5). Once cooled, the bolt (1/2 x 1 inch) and jam nut (1/2 inch) can be removed.

Important: 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.

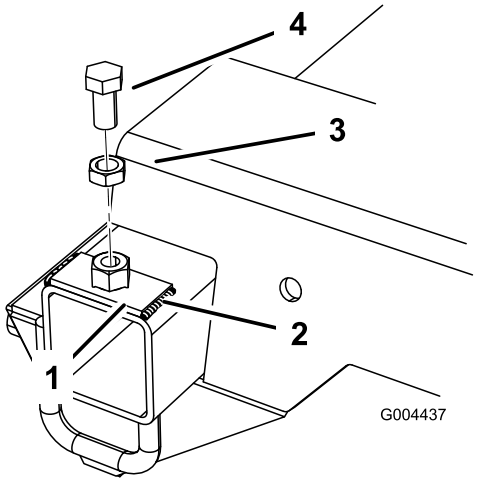

Figure 5

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

Step
5

Installing the Electrical Harness

Parts needed for this step:

1	Wiring harness
5	Cable tie

Procedure

Installing the Electrical Harness (1200 Series Turf Sprayers)

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

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

   A. Remove the seat and pins. Lift seat base from machine.

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

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

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

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

   E. Remove fasteners for console, retain. Lift console away.

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

   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. Replace the shift boot assembly, jam nut and knob.

   D. Install seat to the frame and secure it with the pin and cotter removed previously.

9. At the rear of the machine, route the new connectors to right and left as labeled. If needed, locate the old actuator connectors and tie them back, out of the way.

Installing the Electrical Harness (5700 Turf Sprayers)

1. Prepare machine

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

   B. Do not disconnect the wiring connections from the control panel components.

2. Install wire harness up into the control panel housing.
3. Disconnect the existing connectors for the boom lift switches. 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 into the engine compartment and rearward.
5. Replace the control panel and secure it into place.
6. Install the black ring terminal to the negative ground bolt or ground block.
7. Install the two red ring terminals to the auxiliary side of the solenoid.

8. Route remaining harness rearward, along the frame with existing wiring.
9. Use cable ties to secure the wiring harness to the existing wiring in the seat compartment and along the frame.
10. At the rear of the machine, route the new connectors to right and left as labeled. If needed, locate the old actuator connectors and tie them back, out of the way.

Step 6

Installing the New Boom Uprights

Parts needed for this step:

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). Repeat for the opposing boom upright.

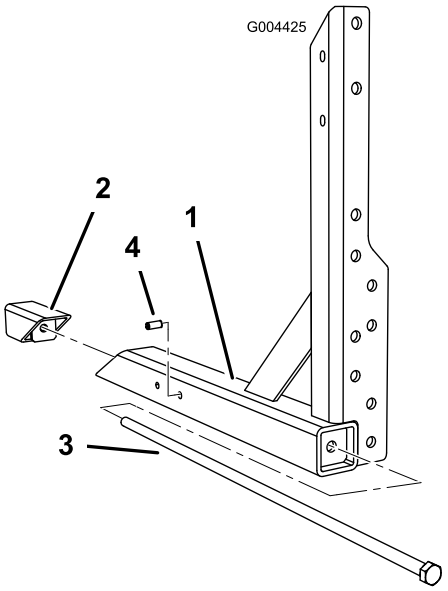

Figure 6

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). Repeat 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). Retain with bolt and jam nut.
   B. For 5700 turf sprayers, insert the boom until the roll pin installed previously stops against the frame.

   For all machines, retain the boom uprights with the bolt (1/2 x 1 inch) and jam nut (1/2 inch) in the weld plate previously installed.

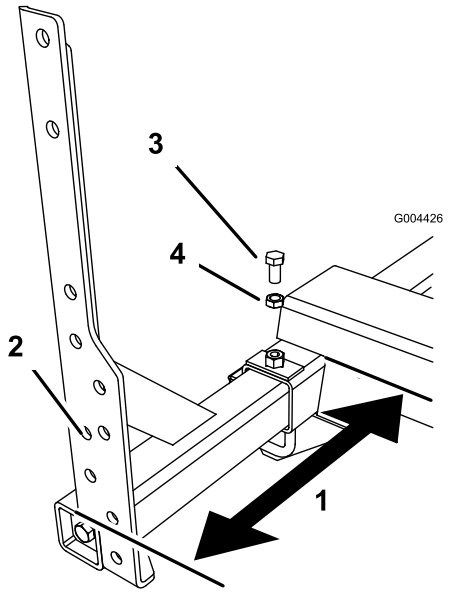

Figure 7

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 75 ± 8 ft-lbs (102 ± 11 N·m).

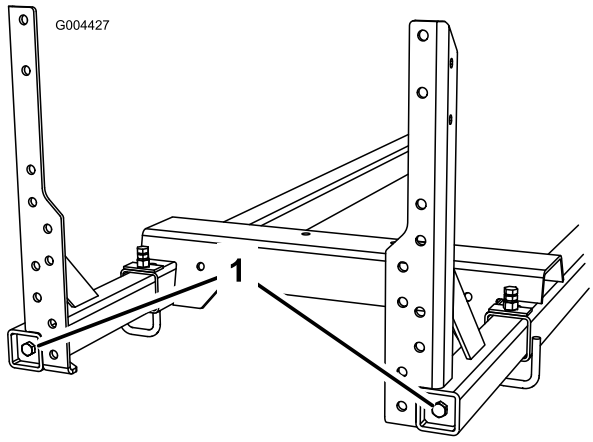

Figure 8

1. Boom frame bolts

Step 7

Installing the Tank Assembly

No Parts Required

Procedure

1. Install front and rear tank saddles to the frame.
2. Secure with fasteners removed previously
3. Install tank assembly.
4. Secure assembly with straps and long bolts.

Step

8

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

Parts needed for this step:

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

Procedure

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

   Note: Remove the boom supply hoses with caution. Hose can retain fluid which may have chemicals present.

2. Cut away and plastic ties securing the valve assembly and wiring harness to the cross bar.
3. Remove and retain any fasteners securing the valve assembly to the cross bar between the uprights.
4. Remove valve assembly from the cross bar between the uprights.

Removing the Valve Assembly from 5700 Turf Sprayers

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

   Note: Remove the boom supply hoses with caution. Hose can retain fluid which may have chemicals present.

2. Remove the fasteners securing the bracket and valve assembly to the upper and lower cross bars. Remove the bracket and valve assembly and retain all fasteners.
3. 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.
4. Disassemble the bracket. Remove the valve assembly and tee valve from the lower half of the bracket.
5. Retain the fasteners and valve assembly. Discard the bracket.

Installing the Valve Assembly on 1250 Turf Sprayers

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

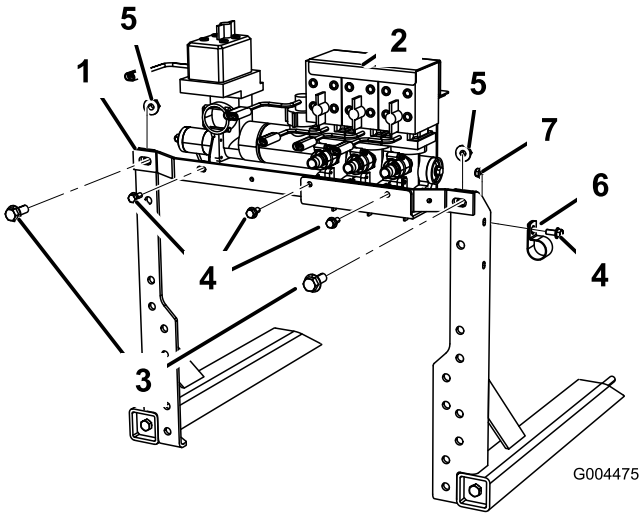

Figure 9

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

2. Secure valve assembly to the bar using 3 bolts (5/16 x 3/4 inch) (Figure 9).
3. Install the hose clamp to 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 previously disconnected from the valve assembly.

Installing the Valve Assembly on 5700 Turf Sprayers

1. Install lower crossbar removed from the old boom uprights using existing fasteners. Instal the new valve bracket support to the lower cross bar using existing carriage bolts and fasteners (Figure 10).

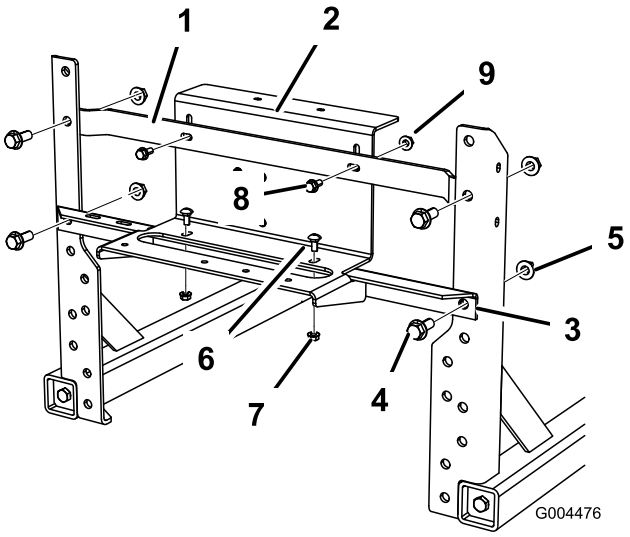

Figure 10

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

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

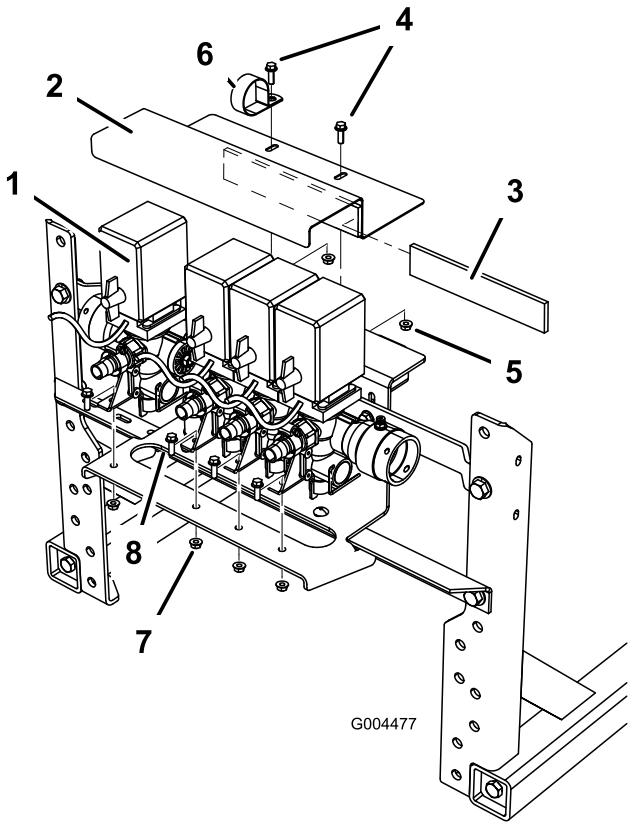

Figure 11

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

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

Step 9

Installing the Boom Assembly

Parts needed for this step:

1	Center boom assembly
2	Boom transport cradle
14	Bolt (3/8 x 1-1/4 inches)
8	Spacer
14	Lock nut (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 using six bolts (3/8 x 1-1/4 inches) and six lock nuts (3/8 inch). Orientate them as shown in Figure 12

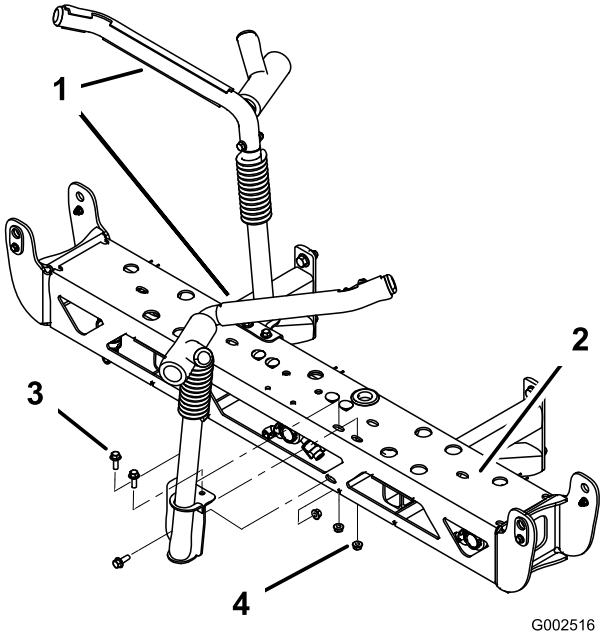

Figure 12

1. Boom transport cradle
2. Bolt (3/8 x 1-1/4 inches)
3. Lock nut (3/8 inch)

2. Use the graphic to locate the set of mounting holes the center boom will be installed to for your machine (Figure 13).

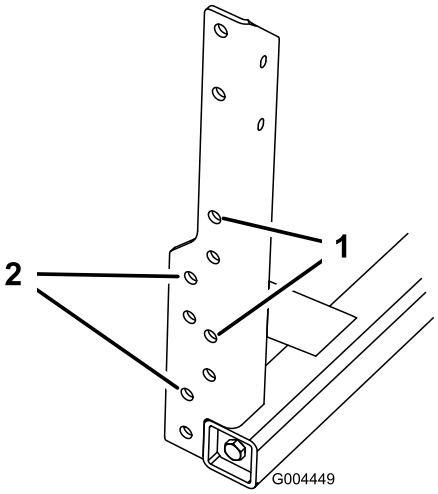

Figure 13

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. The lower set of holes can be used to mount booms so that the nozzles will be 18 inches off the ground.

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

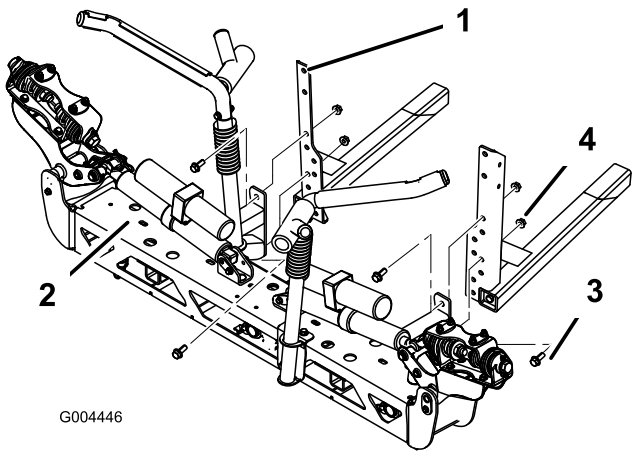

Figure 14

1200 series turf sprayers install 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 electrical connections for boom actuators to newly routed connectors.
5. Power on the system and use the boom lift switches to extend the boom actuator rods. This is to allow the left and right boom extensions to be installed.
6. Remove the four bolts, four washers and four nuts on the hinge plate.
7. Install the extension boom to the center boom at the hinge plate using four bolts, four washers and four nuts removed in step 6 as shown in Figure 15.

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

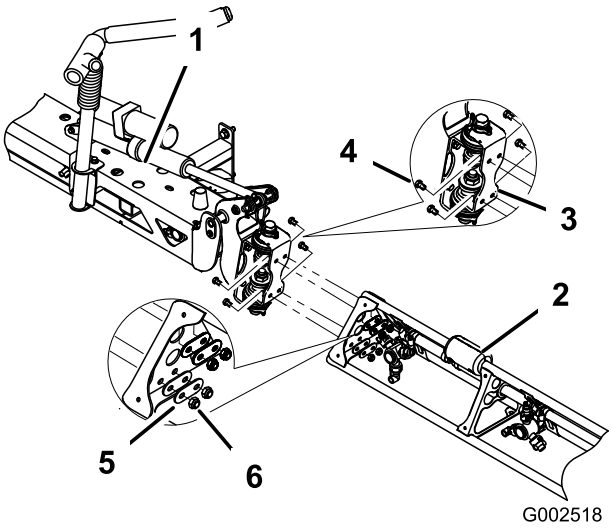

Figure 15

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 all spray turrets are facing to the rear.

Step
10

Connecting the Boom Hoses

Parts needed for this step:

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. Use a hose clamp to secure it 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. Use the hose clamps to secure it 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. 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. Use the hose clamps to secure them to the hose barbs.
4. Route the left and right boom supply hoses from the valve assembly to the corresponding boom extensions. Use the hose clamps to secure it 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. 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 loose parts to the center hose barb in the valve assembly. 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. Use the hose clamps to secure them to the hose barbs.
5. Route the left and right boom supply hoses from the valve assembly to the corresponding boom extensions. Use the hose clamps to secure it 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. Leave enough slack in the hose to keep the hoses from kinking when the booms are raised to the transport position.

Step
11

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 1.56 inches if necessary.

Before operating the machine, the springs must be adjusted 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).
   A. All springs must be compressed until they measure 1.56 inches.
   B. Use the jam nut to compress any spring that measure greater than 1.56 inches.

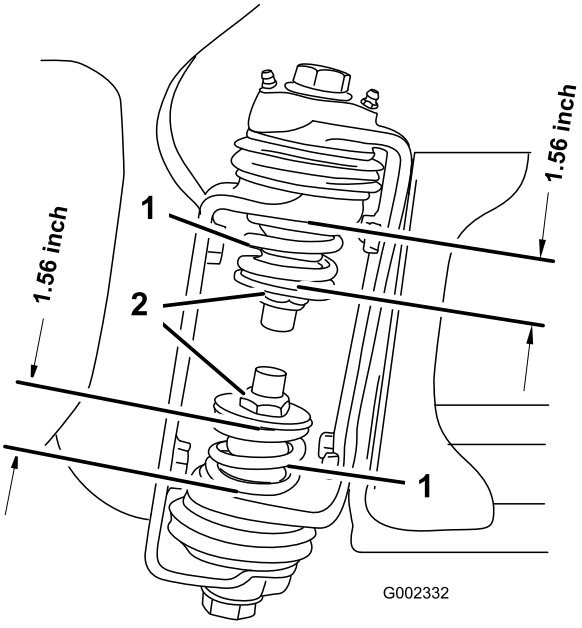

Figure 16

1. Boom hinge spring 2. Jam nut

3. Repeat the procedure for each spring on both boom hinges.
4. Move the booms into the transport "X" position. See Operating the Booms in Operation , page 15 for more information.

Step 12

Completing the Setup

Parts needed for this step:

1	*Parts Catalog*

Procedure

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. Please contact your Authorized Toro Dealer for additional information.

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 this *Installation Instructions*.

Operation

Operating the Booms

The boom lift switches on the sprayer control panel allows you to move the booms between transport position and 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. 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. 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 the actuators are fully retracted before transport.

The Boom Transport Cradle

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, the boom(s) can be pushed 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. While the booms will not be damaged due to this movement, they should be immediately put back into the transport cradle.

Important: The booms can be damaged by transporting them in any position other than the "X" transport position using the boom transport cradle.

To put the booms back into the transport cradle, lower the boom(s) to the spray position, and then raise the boom(s) back into the transport position. Make sure the boom cylinders are fully retracted to prevent actuator rod damage.

Maintenance

Greasing 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: No. 2 general-purpose lithium base 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

1. Grease fitting

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

Greasing the Actuator Rod Bearings

Grease the bearing end of the both boom actuator rods at 400 hours and/or yearly.

Grease Type: No. 2 general-purpose lithium base grease.

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

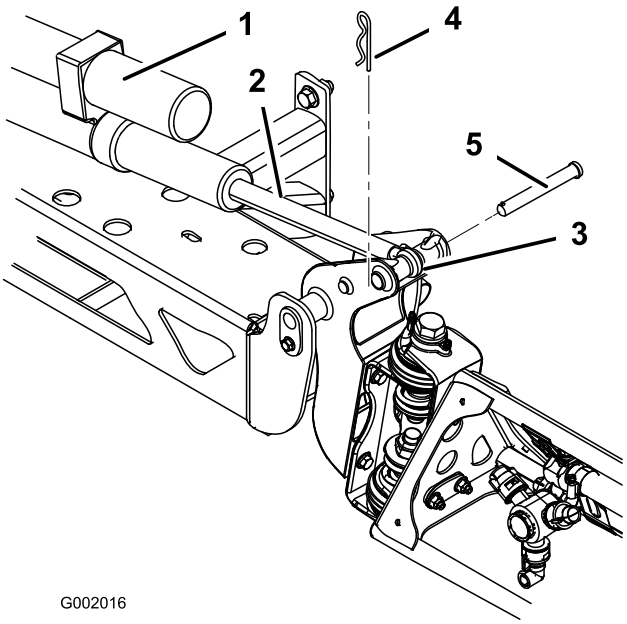

Figure 18

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

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

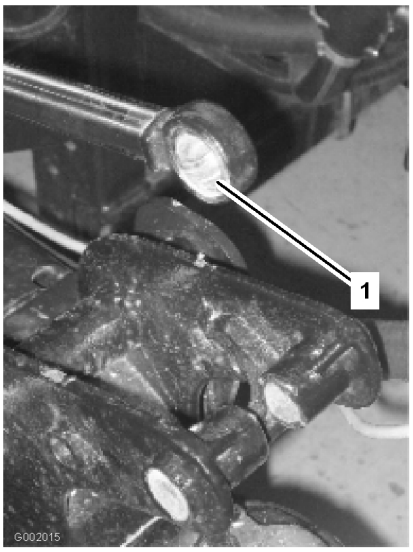

Figure 19

Right boom

1. Grease bearing

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

Adjusting the Boom Actuator

Inspect the actuator hydraulic oil for air bubbles every 400 hours.

1. Position the sprayer on a level surface, 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 movement refer to below.
4. Repeat the procedure for the opposing boom.

If the actuator rod exhibits an axial movement (travels into or out of the cylinder) greater than 0.085-0.100 inch (2.16-2.54 mm), 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.

Emergency Manual Operation of the Boom Actuators

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

Use of 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 the surrounding area is clear and no one is inside the operating range of the boom.**

Adjusting the manual relief valve with electrical power present could cause the actuator 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, the manual relief valve can be used to relieve pressure within the actuator and allow the booms to be moved manually.

Important: The manual valve must not be loosened 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. The manual relief valve is the smaller valve and is only on one side of the actuator body (Figure 20).

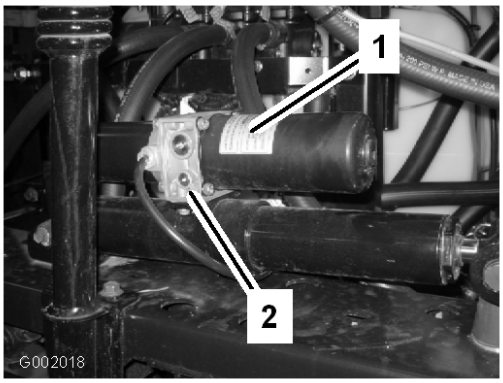

Figure 20

1. Actuator, right boom
2. Manual relief valve

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 2-3 turns. The cylinder should start stroking manually or by external pressure at this time.
3. Once the original position of the actuator is recovered, close the manual relief valve. Torque the valve to 1.1-2.1 ft-lb (1.5-2.9 N·m).

Inspecting the Nylon Pivot Bushings

Inspect the nylon pivot bushings in the center boom every 400 hours and/or yearly for damage.

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 nut securing the pivot pin to the boom assembly (Figure 21). Remove the pivot pin.

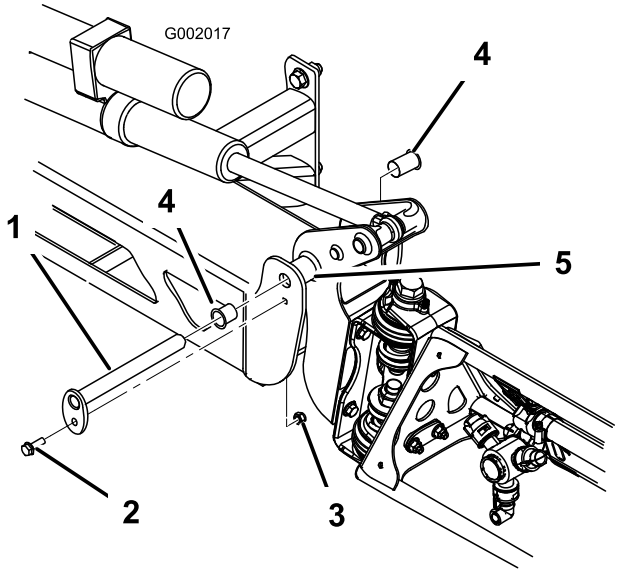

Figure 21

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

4. Remove the boom and pivot bracket assembly from the center frame to access the nylon bushings.
5. Remove and inspect the nylon bushings from the front and back sides of the pivot bracket (Figure 21). Replace any damaged bushings.
6. Place a small amount of oil on the nylon bushings and install them into pivot bracket.
7. Install the boom and pivot bracket assembly into the center frame, aligning the openings (Figure 21).
8. Install the pivot pin and secure it with the bolt and nut removed previously.

Repeat the procedure 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.	1. Turn the valve off manually. Disconnect the electrical connector on the valve and clean all leads, then reconnect it.
	2. Blown fuse	2. Check the fuses and replace them as necessary.
	3. Pinched hose	3. Repair or replace the hose.
	4. A boom by-pass valve is improperly adjusted.	4. Adjust the boom by-pass valves.
	5. Damaged boom valve	5. Contact your Authorized Service Dealer.
	6. Damaged electrical system	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.	1. Adjust the boom bypass valve.
	2. There is an obstruction in the boom valve body.	2. Remove the inlet and outlet connections to the boom valve and remove any obstructions.
	3. A nozzle filter is damaged or clogged.	3. Remove and inspect all nozzles.

Problem	Possible Cause	Corrective Action
Boom actuator is not operating properly.	1. A thermal breaker in the fuse block responsible for powering the actuator has tripped due to overheating.	1. Wait for the system to cool down before resuming operation. If the thermal breaker trip repeatedly, contact your Authorized Service Dealer.
	2. A thermal breaker in the boom actuator responsible for powering the actuator has tripped or malfunctioned.	2. Contact your Authorized Service Dealer.