



Valve Conversion Kit

Multi Pro® 1750 Turf Sprayer

Model No. 136-0372

Installation Instructions

The valve conversion kit is a kit that replaces the sprayer control valves and related components for a turf spray application vehicle.

You may contact Toro directly at www.Toro.com for product safety and operation training materials, accessory information, help finding a dealer, or to register your product.

▲ 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.

Use of this product may cause exposure to chemicals known to the State of California to cause cancer, birth defects, or other reproductive harm.

Safety

▲ WARNING

Chemical substances used in the spray system may be hazardous and toxic to you, bystanders, animals, plants, soils, or other property.

- Carefully read and follow the chemical warning labels and material safety data sheets (MSDS) for all chemicals used and protect yourself according to the chemical manufacturer's recommendations. For example, use appropriate personal protective equipment (PPE), including face and eye protection, gloves, or other equipment to guard against personal contact with a chemical.
- There may be more than 1 chemical used and information on each chemical should be assessed.
- Refuse to operate or work on the sprayer if this information is not available.
- Before working on a spray system, ensure that the system has been triple rinsed and neutralized according to the recommendations of the chemical manufacturer(s) and that all the valves have been cycled 3 times.
- Verify that there is an adequate supply of clean water and soap nearby, and immediately wash off any chemicals that contact you.



Safety and Instructional Decals



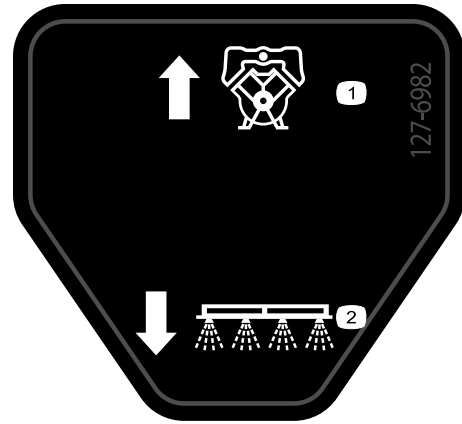
Safety decals and instructions are easily visible to the operator and are located near any area of potential danger. Replace any decal that is damaged or missing.



127-6976

1. Decrease

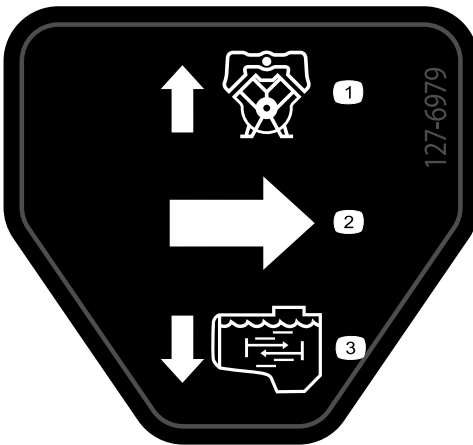
2. Increase



127-6982

1. Pump-return flow

2. Boom spray

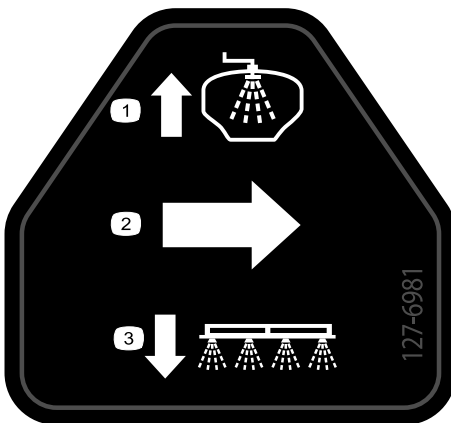


127-6979

1. Pump-return flow

3. Agitation flow

2. Flow



127-6981

1. Bypass-return flow

3. Boom spray

2. Flow

Installation

Loose Parts

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

Procedure	Description	Qty.	Use
1	No parts required	–	Prepare to install the kit.
2	No parts required	–	Disconnecting the pressure-sense tube.
3	No parts required	–	Disconnect the wire harness from the valves.
4	No parts required	–	Disconnect the optional attachments.
5	No parts required	–	Remove the boom-section valves.
6	No parts required	–	Remove the agitation nozzles.
7	No parts required	–	Remove the agitation, rate, and master-spray valves.
8	Cable ties 3-pin adapter 4-pin adapter	6 5 1	Replace the valve electrical connectors.
9	Agitation, rate, and master-spray manifold Section valve manifold	1 1	Install the valve assemblies.
10	Flow-meter hose—25 x 289 mm (1 x 11-3/8 inches)	1	Install the flow meter and hoses.
11	No parts required	–	Connect the wire harness.
12	Handle Screw (6-32 x 5/8 inch) Agitation throttle valve Bracket (nylon) Agitation-valve bracket Bolt (6 x 12 mm) Eductor-shutoff valve Eductor-shutoff bracket Flange locknut (1/4 inch) Flange-head bolt (5/16 x 3/4 inch)	1 1 1 1 1 4 1 1 4 2	Installing the agitation throttle valve and eductor-shutoff valve for machines with the optional eductor kit.
13	Agitation-nozzle assembly	1	Installing the agitation-nozzle assembly and hoses.
14	Return hose—2.5 x 72 cm (1 x 27-7/8 inches) Agitation supply hose—2.5 x 72 cm (1 x 28-1/4 inches) Bypass hose—2.5 x 110 cm (1 x 43-1/2 inches)—machines without the optional spray wand or electric hose reel kit	1 1 1	Install the return hose, agitation supply hose, and bypass hose.

Procedure	Description	Qty.	Use
15	Sprayer supply hose—2.5 x 73 cm (1 x 28-7/8 inches)—machines without the optional eductor kit	1	Install the sprayer supply hose.
	Flange clamp—40 to 64 mm (1-9/16 to 2-1/2 inches)	2	
	Gasket—25 x 35 mm (1 x 1-3/8 inches)	2	
	Support clamp—machines without the optional eductor kit	1	
	Flange-head bolt (5/16 x 3/4 inch)—machines without the optional eductor kit	1	
	Flange locknut (5/16 inch)—machines without the optional eductor kit	1	
	Lower supply hose—25 x 66 cm (1 x 25-3/4 inches) machines with the optional eductor kit	1	
	Retainer (small)—machines with the optional eductor kit	1	
Upper supply hose—25 x 22 cm (1 x 8-5/8 inches) machines with the optional eductor kit	1		
16	Section bypass hose—2.5 x 146 cm (1 x 57-1/2 inches)	1	Install the spray valve hoses.
	Supply hose—left-boom section—2 x 205 cm (3/4 x 80-13/16 inches)	1	
	Supply hose—center-boom section—2 x 58 cm (3/4 x 22-13/16 inches)	1	
	Supply hose—right-boom section—2 x 170 cm (3/4 x 66-13/16 inches)	1	
17	Cap and retractor	1	Install the shutoff valve and hose for the optional spray gun kit or electric hose-reel kit.
	Straight barbed fitting (1/2 inch)	1	
	Quick-connect fitting (socket)	1	
	Hose clamp 13 to 32 mm (1/2 to 1-1/4 inches)	2	
	Hose—1.3 x 762 cm (1/2 x 300 inches)	1	
	Hose—1.3 x 180 cm (1/2 x 83 inches)	1	
	2412-36 Hose clamp 6 to 11 mm (1/4 to 7/16 inch)	2	
Bypass shutoff valve	1		
Section bypass hose—2.5 x 146 cm (1 x 57-1/2 inches)	1		
18	Eductor supply hose 2 x 88 cm (3/4 x 34-11/16 inches)	1	Install the hose for the optional eductor kit.
	Retainer (small)	1	
19	No parts required	—	Connect the pressure sense tube.
20	No parts required	—	Complete the installation of the GeoLink spray system-finishing kit.

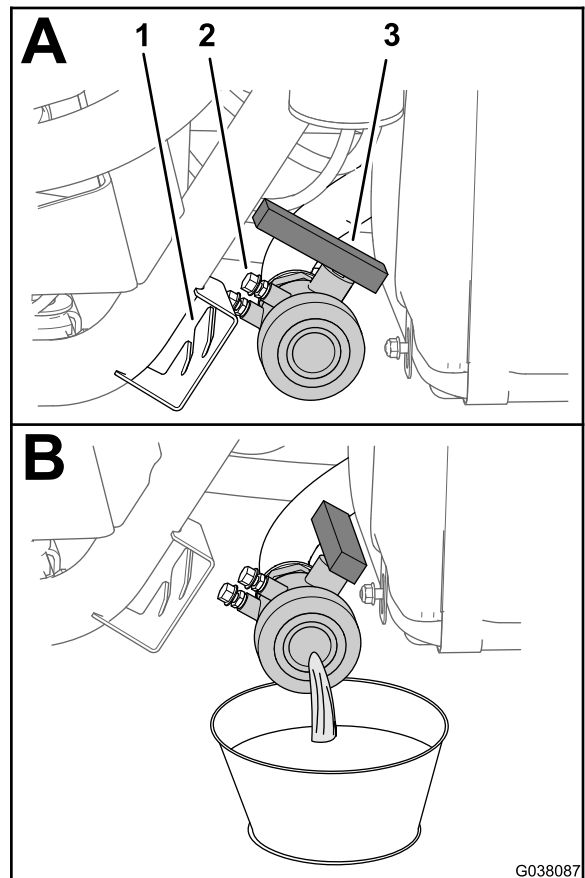
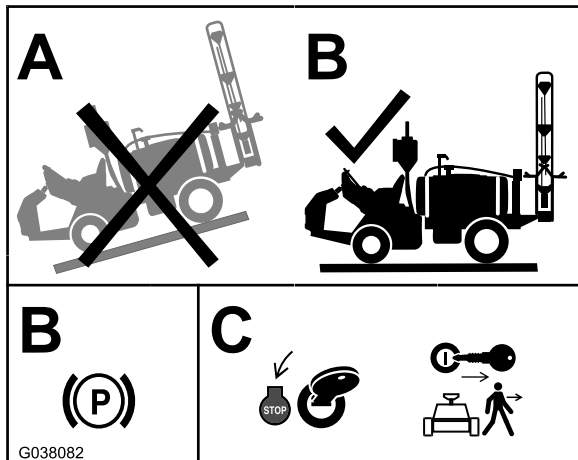
1

Preparing to Install the Kit

No Parts Required

Preparing the Sprayer Tank and Optional Rinse Tank

1. Park the machine on a level surface.
2. Engage the parking brake.
3. Shut off the engine and remove the key.



1. Valve bracket
2. Mount bolt
3. Drain valve

Preparing the Sprayer and Optional Rinse Tank Kit

1. Clean the sprayer; refer to *Cleaning the Sprayer* in the *Operator's Manual* for the machine.

Important: You must completely empty the sprayer tank before installing the Valve Conversion Kit.

2. For machines with the optional tank-rinse kit, perform the following: Pump the water from the rinse tank into the sprayer tank; refer to *Operating the Rinse Kit* in the *Installation Instructions* for the Tank-Rinse Kit.
3. Drain the water from the sprayer tank (Figure 2); refer to *Cleaning the Sprayer* in the *Operator's Manual* for the machine.

Disconnecting the Battery

⚠ WARNING

Electrical sparks can cause the battery gasses to explode, resulting in personal injury.

Incorrect battery cable routing could damage the sprayer and cables, causing sparks.

- Always disconnect the negative (black) battery cable before disconnecting the positive (red) cable.
- Always connect the positive (red) battery cable before connecting the negative (black) cable.

Battery terminals or metal tools could short against metal sprayer components, causing sparks.

- When removing or installing the battery, do not allow the battery terminals to touch any metal parts of the sprayer.
- Do not allow metal tools to short between the battery terminals and metal parts of the sprayer.
- Always keep the battery strap in place to protect and secure the battery.

1. Move the machine onto a level surface, engage the parking brake, shut off the pump, and extend the left and right boom sections to the horizontal position.
2. Rotate the key switch to the OFF position, and remove the key; refer to the *Operator's Manual*.
3. Unlatch the seat by pushing the seat-latch handle rearward (Figure 3).

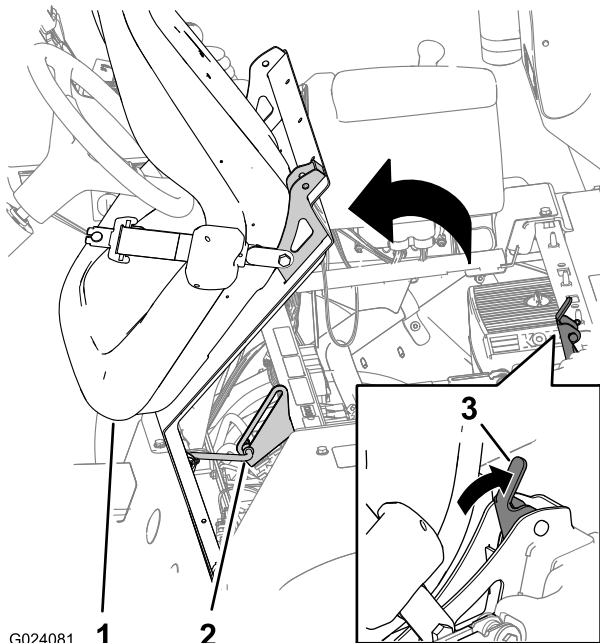


Figure 3

1. Seat
2. Prop rod
3. Seat-latch handle

4. Rotate the seat and seat plate forward until the end of the prop rod at the prop-rod bracket is at the bottom of the groove of the bracket (Figure 3).
5. Allow the engine to cool completely.
6. Disconnect the negative (black—ground) cable from the battery post (Figure 4).

Note: Ensure that the terminal of the battery cable does not touch the post.

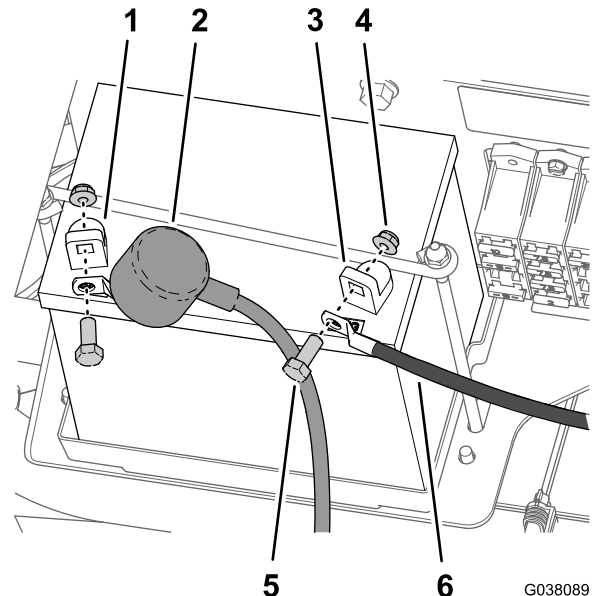


Figure 4

- | | |
|---|-------------------|
| 1. Positive battery post | 4. Nut |
| 2. Insulator cover—positive (red) cable | 5. Bolt |
| 3. Negative battery terminal | 6. Negative cable |

7. Slip back the insulator cover the disconnect the positive (red) cable from the battery post (Figure 4).

2

Disconnecting the Pressure-Sense Tube

No Parts Required

Procedure

1. Press in the collar for the tube coupler in the end cap of the right boom-section valve (Figure 5).

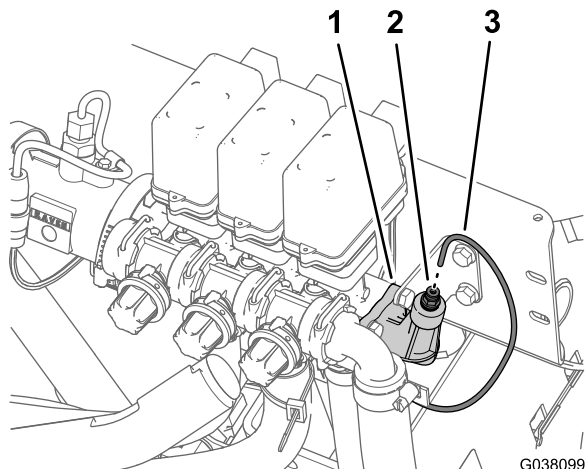


Figure 5

- | | |
|---|------------------------|
| 1. Ported-cap fitting (end of the right boom-section valve) | 3. Pressure-sense tube |
| 2. Tube coupler | |
-
2. Pull the pressure-sense tube for the dash gauge out of the tube coupler (Figure 5).

3

Disconnecting the Wire Harness from the Valves

No Parts Required

Procedure

1. Remove the screw that secures the 3-contact connector of the wire harness labeled RIGHT SPRAY VALVE from right spray valve (Figure 6).

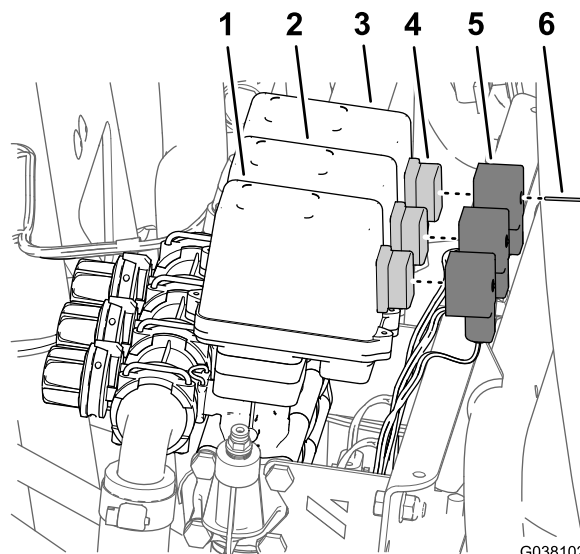


Figure 6

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|-----------------------|--------------------------|
| 1. Right spray valve | 4. Spray-valve connector |
| 2. Center spray valve | 5. 3-contact connector |
| 3. Left spray valve | 6. Screw |
-

2. Remove the 3-contact connector of the wire harness from the spray valve (Figure 6).
3. Repeat steps 1 and 2 for the 3-contact connectors of the wire harness labeled CENTER SPRAY VALVE and LEFT SPRAY VALVE.
4. Remove the screw that secures the 3-contact connector of the wire harness labeled MASTER SPRAY VALVE from right master spray valve (Figure 7).

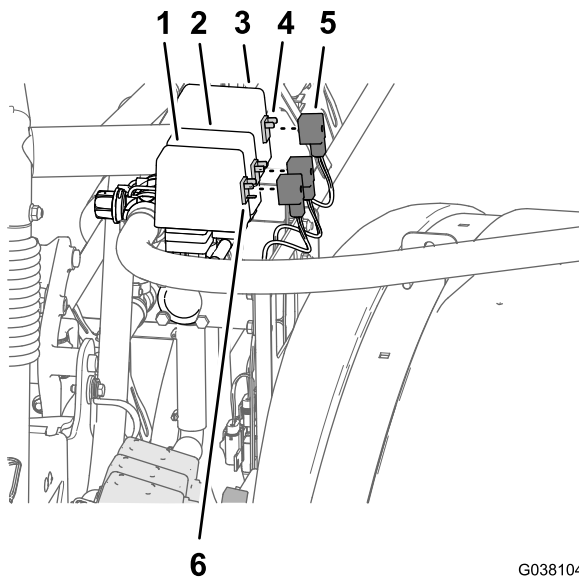


Figure 7

G038104

- | | |
|-----------------------|---|
| 1. Master spray valve | 4. Valve electrical connector (agitation valve) |
| 2. Rate valve | 5. 3-contact connector (wire harness—AGITATION VALVE) |
| 3. Agitation valve | 6. Valve electrical connector (master spray valve) |

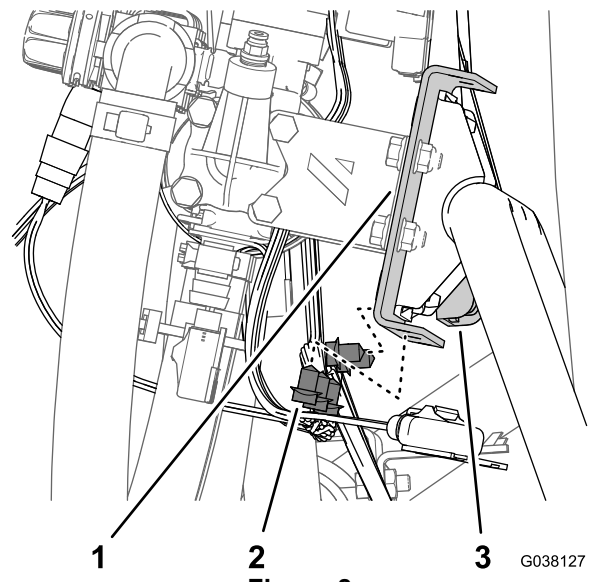


Figure 8

G038127

- | | |
|-----------------------------|--|
| 1. Bracket (throttle valve) | 3. Bracket (agitation/rate/master-spray valve) |
| 2. Push-in fastener | |

-
5. Remove the 3-contact connector of the wire harness from the valve (Figure 7).
 6. Repeat steps 4 and 5 for the 3-contact connectors of the wire harness labeled RATE VALVE and AGITATION VALVE.
 7. Remove the 5 push-in fasteners of the wire harness from the section-valve bracket and the agitation/rate/master-spray bracket.

4

Disconnecting the Optional Attachments

No Parts Required

Disconnecting the Optional Eductor Kit

1. Remove the flange clamp that secures the flanged hose-barb of the supply hose to the inlet flange of the eductor (Figure 9).

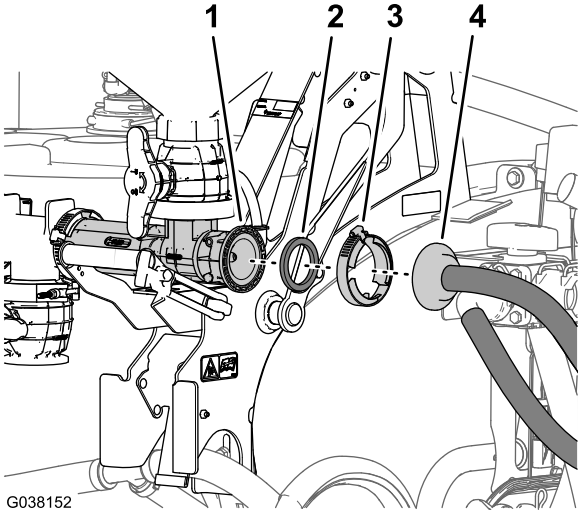


Figure 9

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|---------------------------|------------------------------------|
| 1. Inlet flange (eductor) | 3. Flange clamp |
| 2. Gasket | 4. Flanged-hose-barb (supply hose) |

2. Remove the flanged hose barb and gasket from the eductor (Figure 9).

Note: Retain the flange clamp and gasket for installation in [18 Installing the Supply Hose for the Optional Eductor Kit \(page 47\)](#). You no longer need the supply hose and you will remove it with the agitation, rate, and master spray valves in [7 Removing the Agitation, Rate, and Master-Spray Valves \(page 14\)](#).

3. Remove the retainer that secures the 90° barbed fitting of the sprayer supply hose to the T-fitting located forward of the pressure-relief valve (Figure 11).

Note: Retain the retainers for installation in [Installing the Sprayer Supply Hose—Machine without the Optional Eductor Kit \(page 34\)](#).

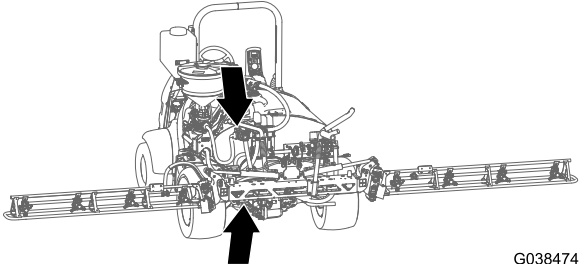


Figure 10

G038474

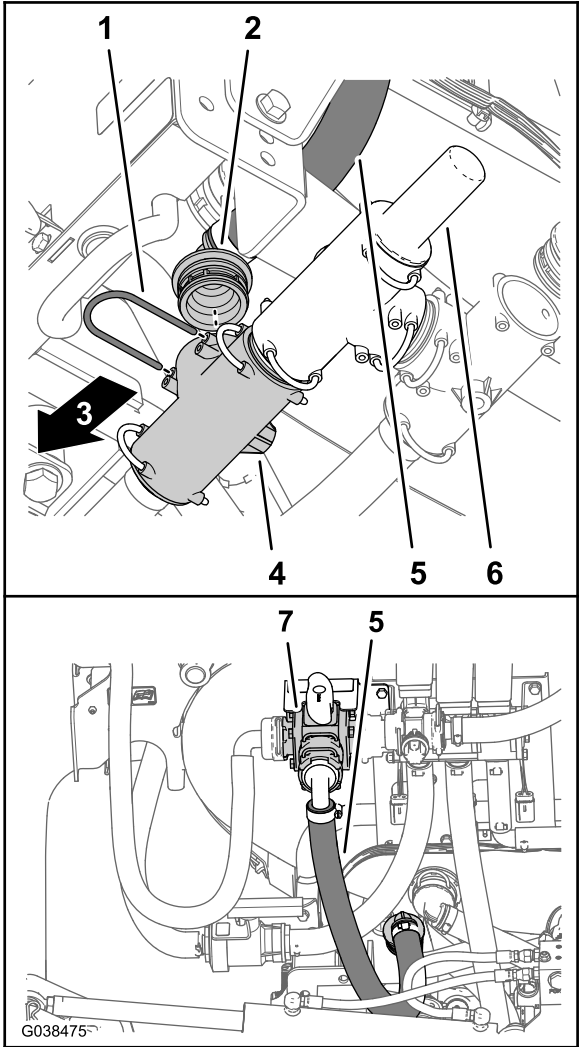


Figure 11

- | | |
|---|--------------------------|
| 1. Retainer | 5. Sprayer supply hose |
| 2. 90° barbed fitting (sprayer supply hose) | 6. Pressure-relief valve |
| 3. Front of the machine | 7. 3-way valve |
| 4. T-fitting | |

4. Remove the 90° barbed fitting from the T-fitting (Figure 11).

Disconnecting the Optional Electric Hose-Reel Kit

1. Remove the hose clamp that secures the supply hose to the barbed fitting at the inlet swivel of the reel ([Figure 12](#)).

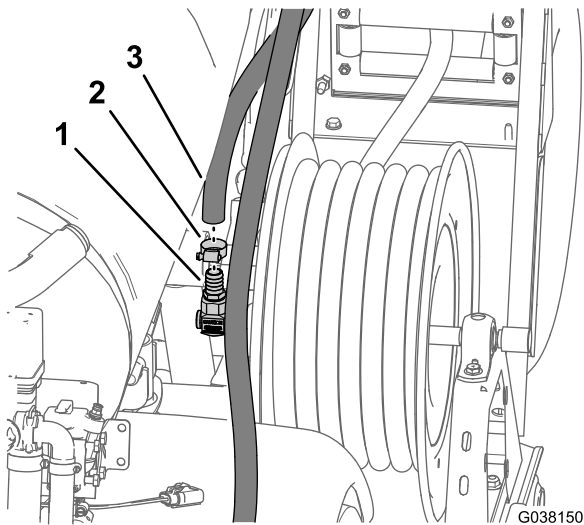


Figure 12

1. Barbed fitting (inlet swivel)
2. Hose clamp
3. Supply hose (hose reel)

2. Remove the supply hose from the barbed fitting ([Figure 12](#)).
3. Remove the inlet hose from the support clamp at the forward strap of the sprayer tank.

Note: You no longer need the supply hose and you will remove it with the boom section valves in [5 Removing the Boom-Section Valves \(page 11\)](#).

Disconnecting the Optional Hand Spray-Wand Kit

1. Remove the hose clamp that secures the supply hose to the barbed fitting of the spray gun ([Figure 13](#)).

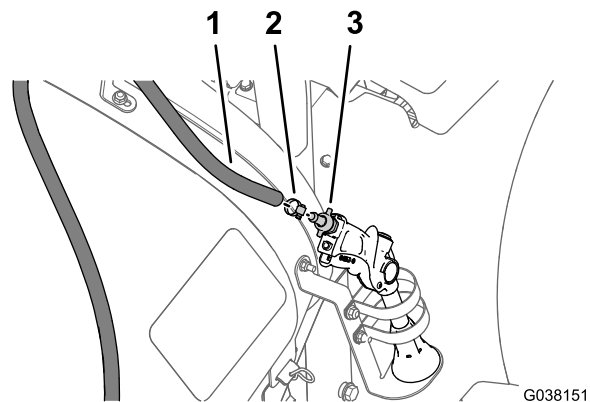


Figure 13

1. Supply hose (hand spray wand)
2. Hose clamp
3. Barbed fitting (spray gun)

2. Remove the supply hose from the barbed fitting ([Figure 13](#))

Note: You no longer need the supply hose and you will remove it with the boom section valves in [5 Removing the Boom-Section Valves \(page 11\)](#).

5

Removing the Boom-Section Valves

No Parts Required

Removing the Boom-Section Hoses

1. At the outer-boom section, remove the hose clamp that secures the supply hose for the boom section to the barbed T-fitting (Figure 14).

Note: Retain the hose clamp for installation in [Installing the Supply Hoses to the Boom Sections](#) (page 39)

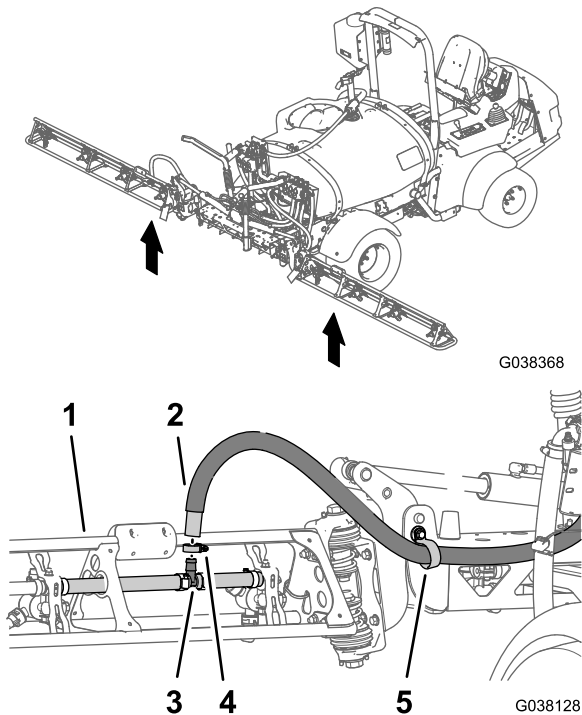


Figure 14

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|-------------------------------------|---------------|
| 1. Outer boom section | 4. Hose clamp |
| 2. Supply hose (outer-boom section) | 5. R-clamp |
| 3. Barbed T-fitting | |

2. Remove the hose from the T-fitting (Figure 14).
3. Remove the free end of the hose from the R-clamp (Figure 14).
4. Repeat steps 1 through 3 for the supply hose at the other outer-boom section.
5. Under the center-boom section, remove the hose clamp that secures the supply hose for the boom section to the barbed T-fitting (Figure 15).

Note: Retain the hose clamp for installation in [Installing the Supply Hoses to the Boom Sections](#) (page 39).

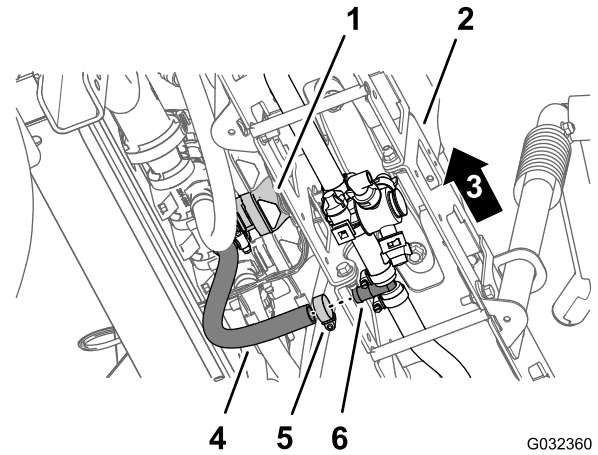
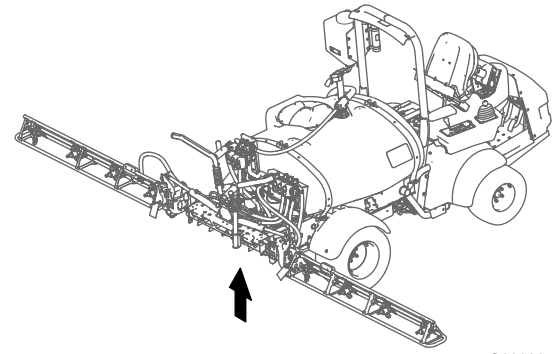


Figure 15

- | | |
|------------------------------|--------------------------------------|
| 1. Center boom-section valve | 4. Supply hose (center-boom section) |
| 2. Center-boom section | 5. Hose clamp |
| 3. Left side of the machine | 6. Barbed T-fitting |

Removing the Flow Meter from the Valve Manifolds

1. Remove the flange clamp that secures the barbed flange fitting of the flow meter hose to the flow meter (Figure 16).

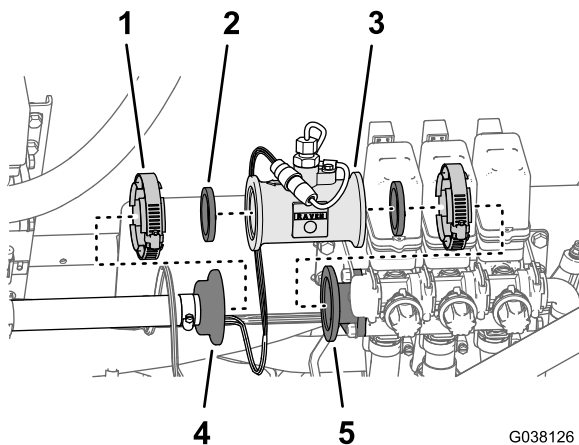


Figure 16

1. Flange clamp
2. Gasket
3. Flow meter
4. Barbed flange fitting (flow-meter hose)
5. Adapter fitting (left boom-section valve)

2. Remove the flange clamp that secure the flow meter to the adapter fitting at the left boom-section valve (Figure 16).
3. Remove the flow meter and 2 gaskets from the valve manifolds (Figure 16).

Note: Set the flow meter aside—do not remove the electrical connector; retain the flange clamps and gaskets for installation in [Installing the Flow Meter](#) (page 26).

Removing the Bypass Hose from the Boom-Section Valves

1. Remove the retainer that secures the 90° barbed fitting of the bypass hose from the socket fitting of the bypass valve at the right boom section valve (Figure 17).

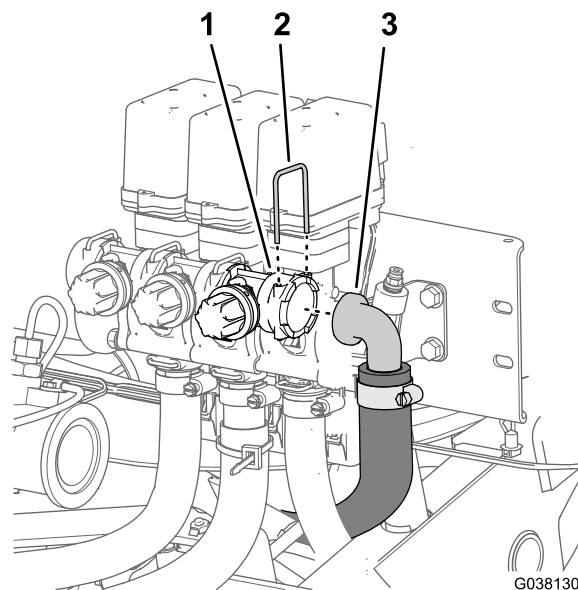


Figure 17

1. Bypass manifold (boom-section valves)
2. Retainer
3. Bypass hose

2. Remove the bypass hose from the bypass valve (Figure 17).

Removing the Boom-Section Valves, Supply Hoses, and Section-Valve Mount

1. Remove the 4 flange-head bolts (5/16 x 3/4 inch) that secure the section-valve bracket to the section-valve mount (Figure 18).

Note: Retain the flange-head bolts for installation in [Installing the Section Valve Manifold](#) (page 24).

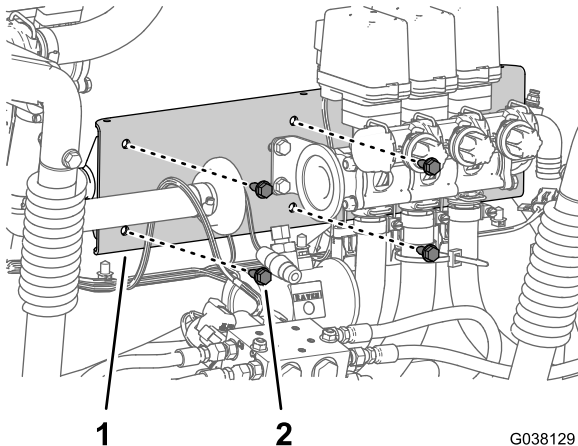


Figure 18

1. Bracket (section-valve)
2. Flange-head bolt (5/16 x 3/4 inch)

2. Lift the boom-section valves, supply hoses, and section-valve bracket from the machine (Figure 19).

Note: You no longer need the valves, hoses, and bracket.

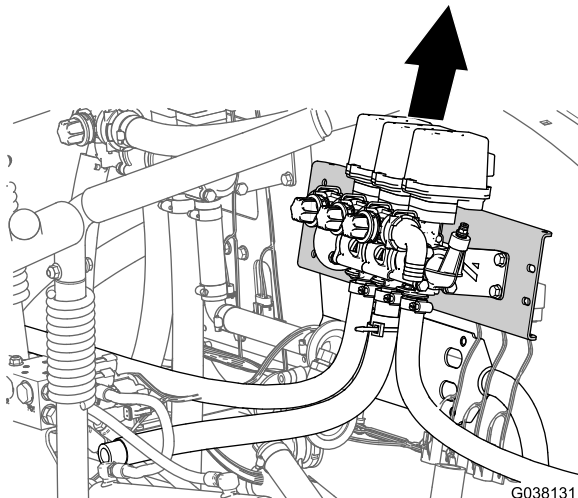


Figure 19

6

Removing the Agitation Nozzles

No Parts Required

Removing the Agitation Nozzles from the Sprayer Tank

1. Remove the 3 retainers that secure the agitation nozzles to the bulkhead fittings at the left side of the sprayer tank (Figure 20).

Note: Retain the retainers for installation in [13 Installing the Agitation-Nozzle Assembly and Hoses](#) (page 30).

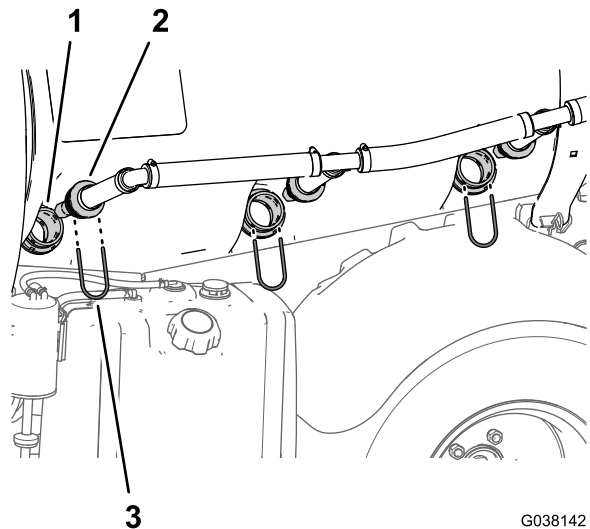


Figure 20

1. Bulkhead fitting
2. Agitation nozzle
3. Retainer

2. Remove the agitation nozzles from the bulkhead fittings (Figure 20).

Removing the Bracket for the Agitation Throttle Mount

1. Remove the 2 flange-head bolts (5/16 x 5/8 inch) that secure the agitation throttle valve to the throttle-valve bracket (Figure 21).

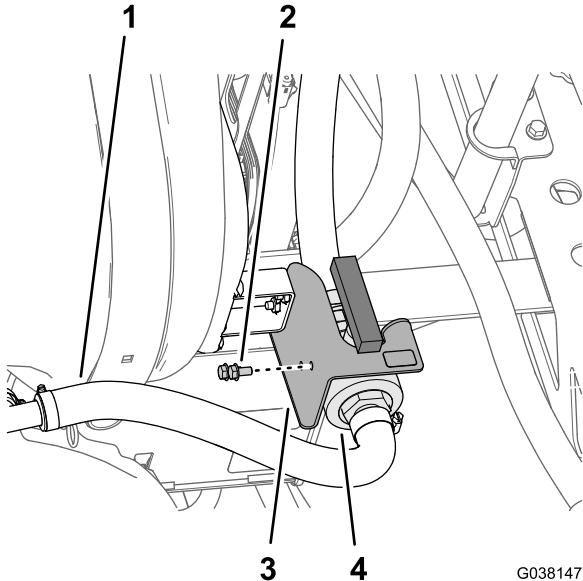


Figure 21

- | | |
|---------------------------------------|-----------------------------|
| 1. Agitation supply hose | 3. Bracket (throttle valve) |
| 2. Flange-head bolt (5/16 x 5/8 inch) | 4. Agitation throttle valve |

2. Remove the 2 flange-head bolts (5/16 x 3/4 inch) that secure the throttle-valve bracket to the throttle-valve mount, and remove the bracket (Figure 22).

Note: You no longer need the 4 flange-head bolts and throttle-valve bracket.

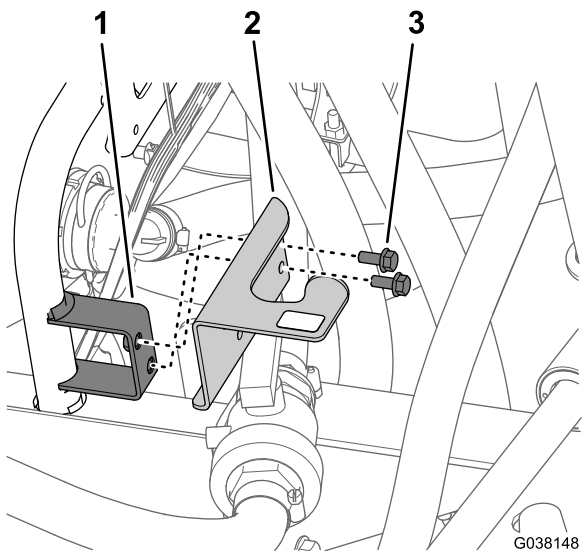


Figure 22

- | | |
|-----------------------------------|---------------------------------------|
| 1. Mount (throttle-valve bracket) | 3. Flange-head bolt (5/16 x 3/4 inch) |
| 2. Bracket (throttle valve) | |

7

Removing the Agitation, Rate, and Master-Spray Valves

No Parts Required

Disconnecting the Return, Sprayer-Supply, and Bypass Hoses

1. At the back of the machine, remove the retainer that secures the 90° barbed fitting of the return hose to the T-fitting located inboard of the pressure-relief valve (Figure 23).

Note: Retain the retainers for installation in [Installing the Return Hose](#) (page 31).

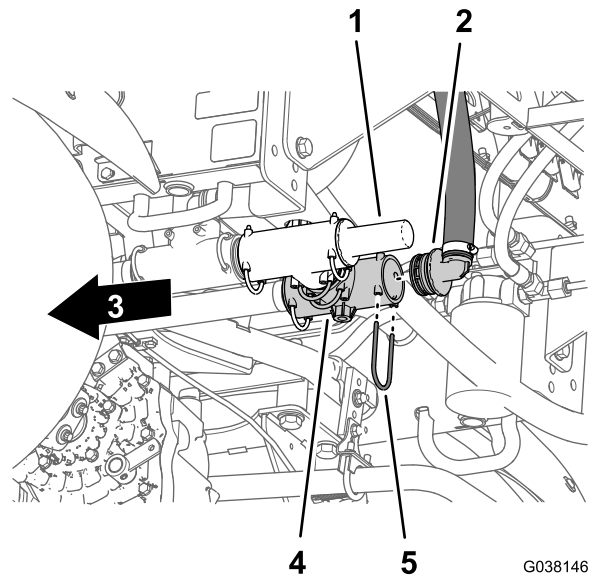


Figure 23

- | | |
|-------------------------------------|--------------|
| 1. Pressure-relief valve | 4. T-fitting |
| 2. 90° barbed fitting (return hose) | 5. Retainer |
| 3. Front of the machine | |

2. Remove the 90° barbed fitting from the T-fitting (Figure 23).
3. Remove the retainer that secures the 90° barbed fitting of the sprayer supply hose to the T-fitting located forward of the pressure-relief valve (Figure 24).

Note: Retain the retainers for installation in [Installing the Sprayer Supply Hose—Machine without the Optional Eductor Kit](#) (page 34).

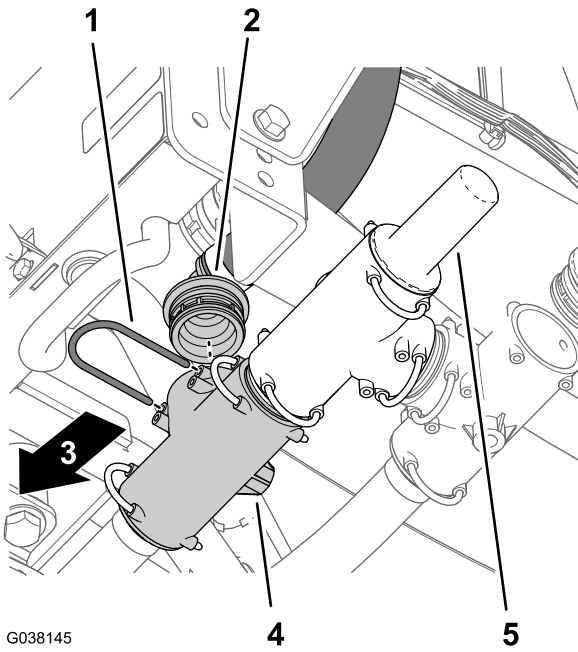


Figure 24

- | | |
|---|--------------------------------------|
| 1. Retainer | 4. T-fitting |
| 2. 90° barbed fitting (sprayer supply hose) | 5. Pressure-relief valve supply hose |
| 3. Front of the machine | |

- Remove the 90° barbed fitting from the T-fitting (Figure 24).
- At the top of the of the sprayer tank, remove the retainer that secures the straight barbed fitting of the bypass hose to the T-fitting (Figure 25).

Note: Retain the retainers for installation in [Installing the Bypass Hose—Machines without the Optional Spray Wand Kit or Electric Hose Reel Kit](#) (page 33).

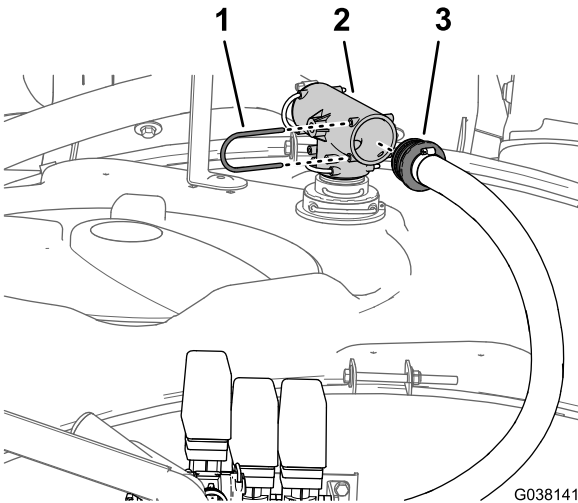


Figure 25

- | | |
|--------------|--|
| 1. Retainer | 3. Straight barbed fitting (bypass hose) |
| 2. T-fitting | |

- Remove the straight barbed fitting from the T-fitting (Figure 25).

Removing the Agitation, Rate, and Master-Spray Valves from the Machine

- While supporting the bracket for the agitation, rate, and master-spray valves, remove the 3 flange-head bolts (5/16 x 3/4 inch) that secure valve bracket to the mount (Figure 26).

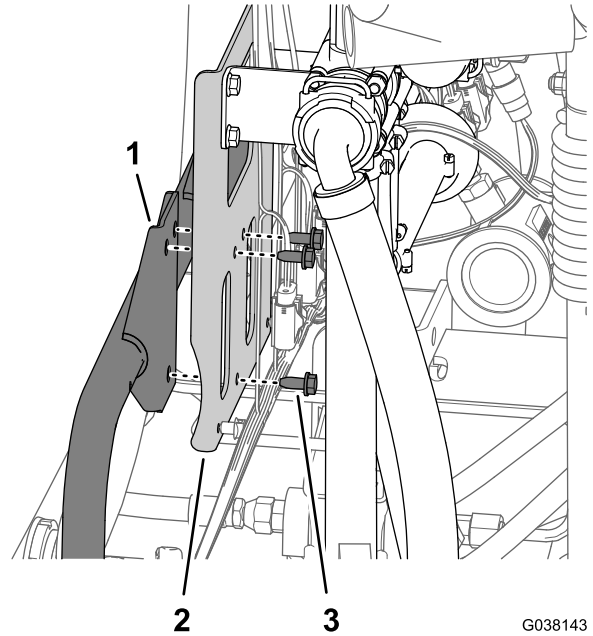


Figure 26

- | | |
|------------|--|
| 1. Mount | 3. Flange-head bolts (5/16 x 3/4 inch) |
| 2. Bracket | |

- Remove the bracket, valves, hoses, and agitation nozzles from the machine (Figure 27).

Note: Retain the 3 flange-head bolts (5/16 x 3/4 inch) for installation in [Installing the Agitation, Rate, and Master-Spray Valve Manifold](#) (page 24); you no longer need the bracket, valves, hoses, and agitation nozzles.

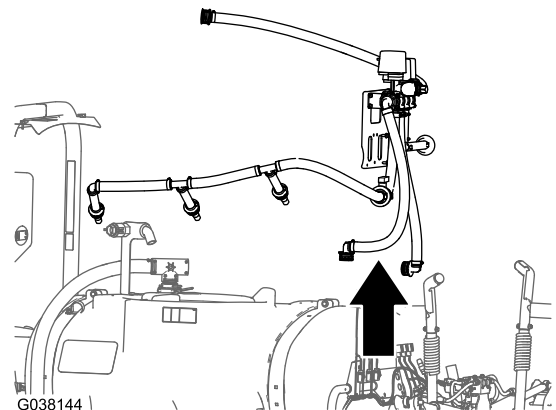


Figure 27

Removing the Section Bypass Hose

1. Remove the retainer that secures the 90° barbed fitting of the section bypass hose for the boom-section valves from the bulkhead fitting at the back of the sprayer tank (Figure 28).

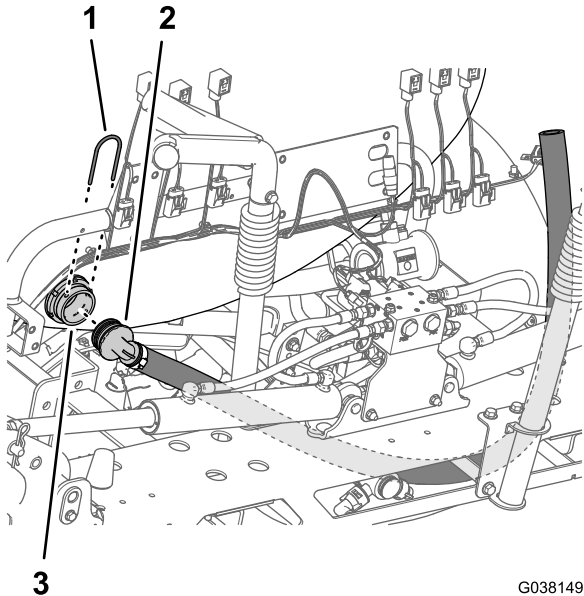


Figure 28

1. Retainer
2. 90° barbed fitting—section bypass hose (boom-section valves)
3. Bulkhead fitting (sprayer tank)

2. Remove the 90° barbed fitting from the bulkhead fitting (Figure 28).

Note: Retain the retainers for installation in [Installing the Section Bypass Hose \(page 37\)](#); you no longer need the bypass hose for the boom-section valves.

8

Replacing the Valve Electrical Connectors

Parts needed for this procedure:

6	Cable ties
5	3-pin adapter
1	4-pin adapter

Preparing the Wire Harness

1. At the back of the machine, remove the 3 tie wraps that secure the convoluted tubing and inline-fuse block to

the wire harness for the branch labeled RIGHT SPRAY VALVE as shown in Figure 29.

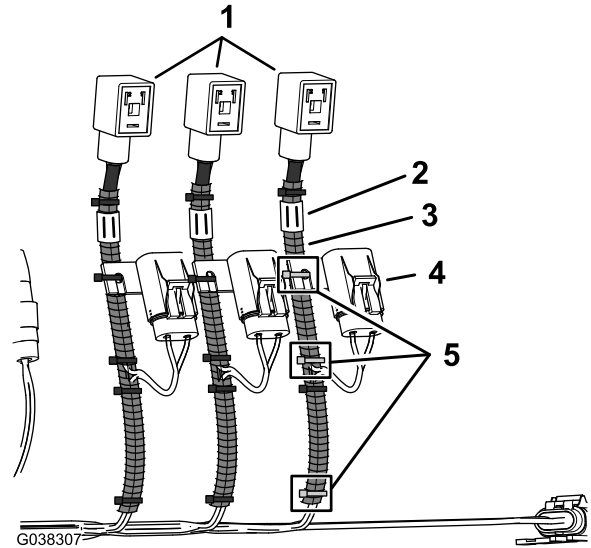
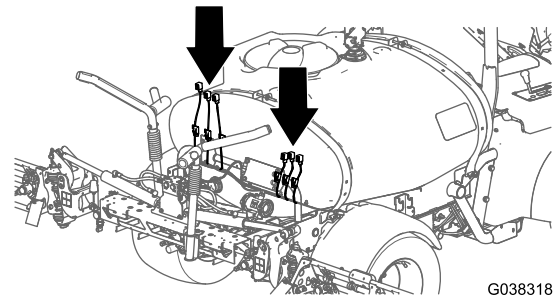


Figure 29

1. DIN connectors
2. Label
3. Convoluted tubing
4. Inline-fuse block
5. Cable ties

2. Remove 76 mm (3 inches) section of convoluted tubing as shown in Figure 30.

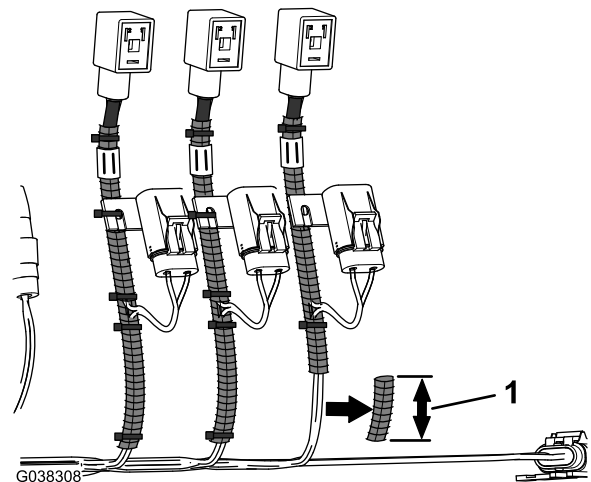


Figure 30

1. Removed section of convoluted tube—76 mm (3 inches)

3. Position the convoluted tubing toward the main branch of the wire harness as shown in Figure 31.

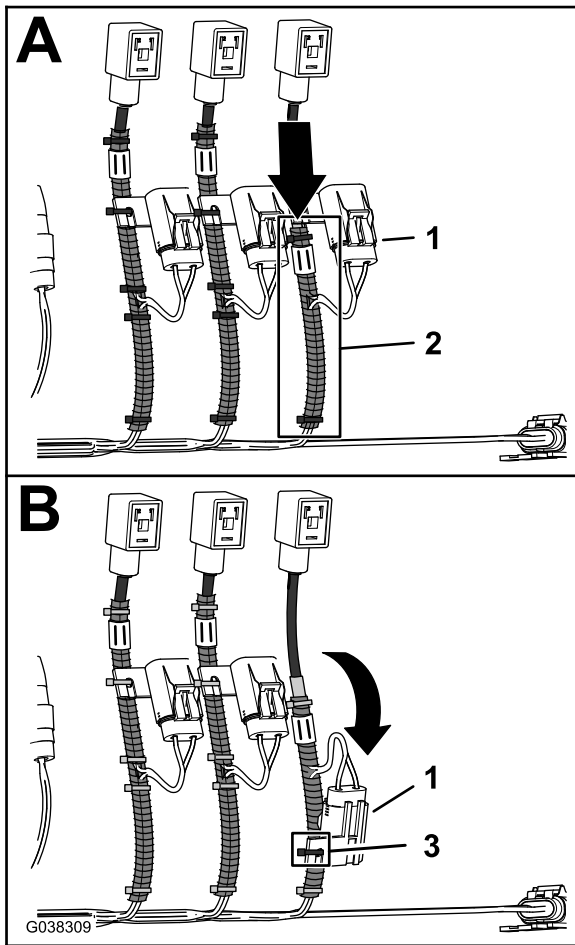


Figure 31

1. Inline-fuse block
2. Positioned convoluted tubing
3. Cable tie

4. Align the inline-fuse block to the convoluted tubing as shown in [Figure 31](#) and secure the fuse block to the tubing with a cable tie.
5. Cut the DIN connector harness below the DIN connector ([Figure 32](#))

Note: Cut the harness as close to the connector.

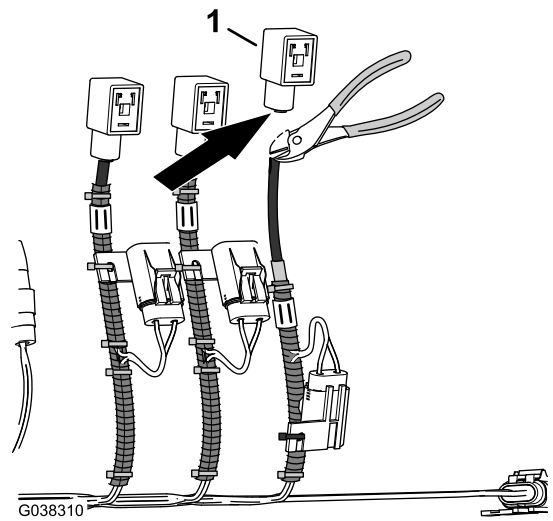


Figure 32

1. DIN connector

6. Remove a 70 mm (2-3/4 inches) section of the sheathing from the DIN connector harness ([Figure 33](#)).

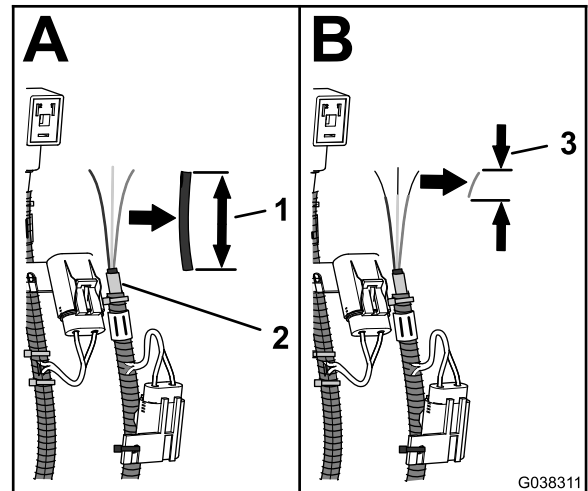


Figure 33

1. Cable sheathing 70 mm (2-3/4 inches)
2. Wire splice (factory made)
3. Removed section of wire insulation—8 mm (5/16 inch)

7. Remove 8 mm (5/16 inch) of insulation from the 3 wires of the DIN connector harness ([Figure 33](#)).
8. Repeat steps 1 through 7 for the wire harness branches labels CENTER SPRAY VALVE, LEFT SPRAY VALVE, RATE VALVE, AGITATION VALVE, and MASTER SPRAY VALVE.

Installing the Right Spray-Valve Connector

1. Align the wire insulation colors of the DIN harness to the wire insulation colors of the 3-pin adapter for the right spray valve as shown in the wire table for the right spray valve.

Wiring Table—Right Spray Valve

Wire color codes—DIN wire harness	Wire color codes—3-pin adapter
Brown	Pink
Blue	Black
Yellow/green	White

- Insert the wire of the DIN wire harness into the butt-splice connector of the 3-pin adapter (Figure 34).

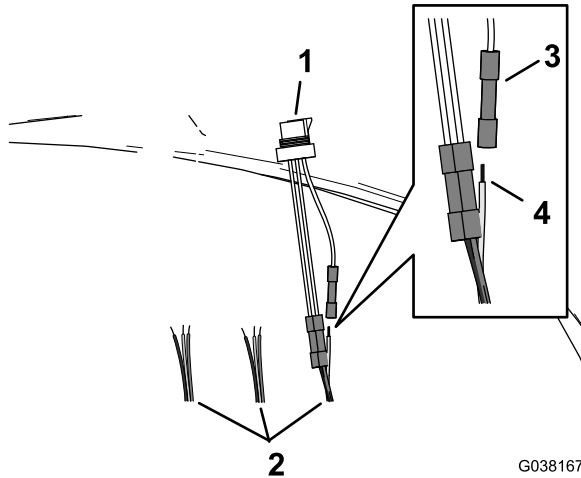


Figure 34

G038167

- 3-pin adapter
- DIN wire harness
- Butt-splice connector
- Exposed wire 9.5 mm (3/8 inch)

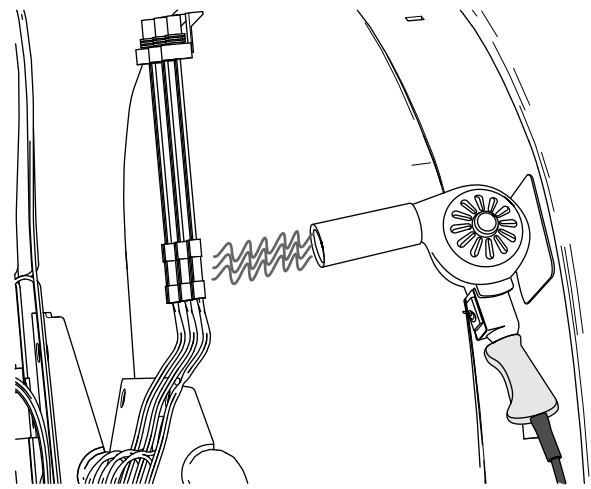


Figure 36

G038166

- Center the crimping tool over the butt-splice connector and wires and crimp the connector securely (Figure 35).

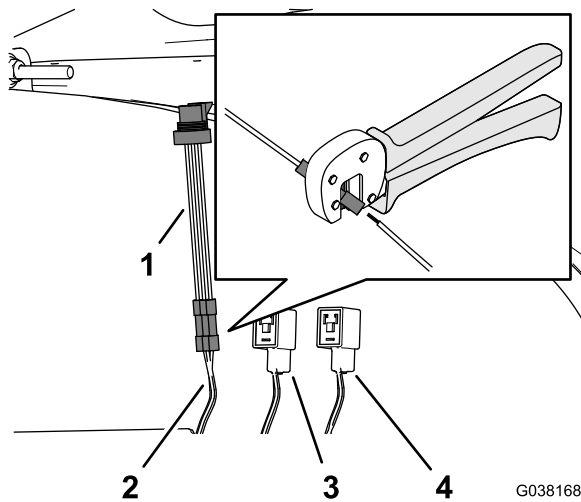


Figure 35

G038168

- 3-pin adapter
- Wire harness branch (left spray)
- Connector (center spray)
- Connector (right spray)

- Repeat steps 2 and 3 for the 2 remaining wires.
- Use a heat gun to shrink the insulating sleeves of the 3 butt-splice connectors (Figure 36).

Installing the Center Spray-Valve Connector

1. Align the wire insulation colors of the DIN harness to the wire insulation colors of the 3-pin adapter for the center spray valve as shown in the wire table for the center spray valve.

Wiring Table—Center Spray Valve

Wire color codes—DIN wire harness	Wire color codes—3-pin adapter
Brown	Pink
Blue	Black
Yellow/green	White

2. Insert the wire of the DIN wire harness into the butt-splice connector of the 3-pin adapter
3. Center the crimping tool over the butt-splice connector and wires and crimp the connector securely.
4. Repeat steps 2 and 3 for the 2 remaining wires.
5. Use a heat gun to shrink the insulating sleeves of the 3 butt-splice connectors.

Installing the Left Spray-Valve Connector

1. Align the wire insulation colors of the DIN harness to the wire insulation colors of the 3-pin adapter for the left spray valve as shown in the wire table for the left spray valve.

Wiring Table—Left Spray Valve

Wire color codes—DIN wire harness	Wire color codes—3-pin adapter
Brown	Pink
Blue	Black
Yellow/green	White

2. Insert the wire of the DIN wire harness into the butt-splice connector of the 3-pin adapter
3. Center the crimping tool over the butt-splice connector and wires and crimp the connector securely.
4. Repeat steps 2 and 3 for the 2 remaining wires.
5. Use a heat gun to shrink the insulating sleeves of the 3 butt-splice connectors.

Installing the Rate-Valve Connector

1. Cut off the butt-splice connectors for the pink wire and black wires of the 4-pin adapter (Figure 37).

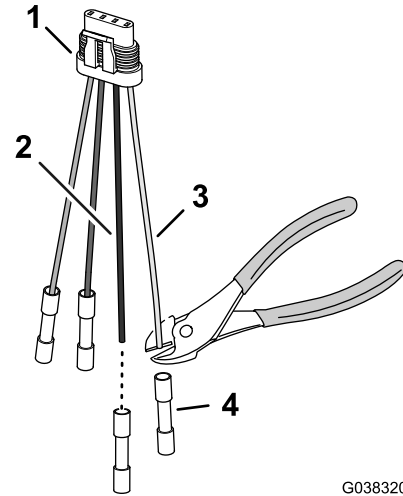


Figure 37

G038320

1. 4-pin adapter
2. Black wire
3. Pink wire
4. Butt-splice connector

2. Strip 8 mm (5/16 inch) of insulation from the pink and black wires of the 4-pin adapter (Figure 38).

Note: You will connect the pink and black wires of the 4-pin adapter in [Installing the Master-Spray Valve Connector](#) (page 22).

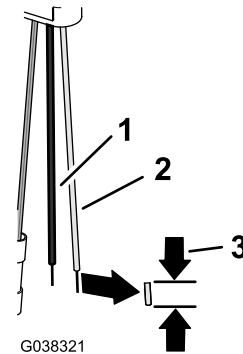


Figure 38

G038321

1. Black wire (4-pin adapter)
2. Pink wire (4-pin adapter)
3. Removed section of wire insulation—8 mm (5/16 inch)

3. Align the brown wire of the DIN harness with the gray wire of the 4-pin adapter for the rate valve (Figure 39); refer to the wire table for the rate valve.

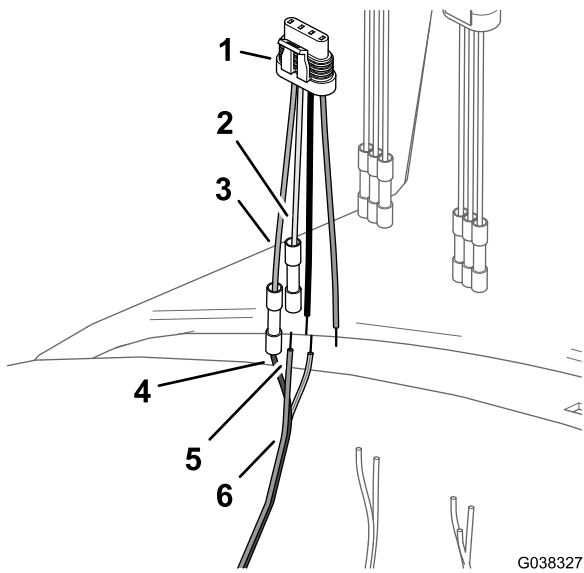


Figure 39

- | | |
|-------------------------------|----------------------------------|
| 1. 4-pin adapter (rate valve) | 4. Blue wire (DIN wire harness) |
| 2. Gray wire (4-pin adapter) | 5. Brown wire (DIN wire harness) |
| 3. Green wire (4-pin adapter) | 6. DIN harness (rate valve) |

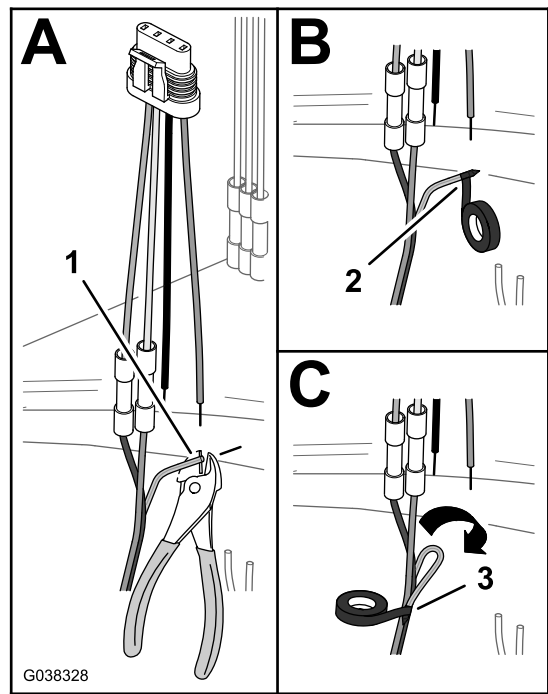


Figure 40

- | | |
|--|--------------------------|
| 1. Green and yellow wire (cutting the conductor) | 3. Taping wires together |
| 2. Taping the end of the green and yellow wire | |

Wiring Table—Rate Valve

Wire color codes—DIN wire harness	Wire color codes—4-pin adapter (rate-valve position)
Not applicable	Pink
Not applicable	Black
Brown	Gray
Blue	Green

4. Insert the brown wire of the DIN wire harness into the butt-splice connector on the gray wire of the 4-pin adapter for the rate valve.
5. Center the crimping tool over the butt-splice connector and wires and crimp the connector securely.
6. Insert the blue wire of the DIN harness and butt-splice connector on the green wire of the 4-pin adapter for the rate valve (Figure 39).
7. Center the crimping tool over the butt-splice connector and wires and crimp the connector securely.
8. Use a heat gun to shrink the insulating sleeves of the butt-splice connectors of the wires that you installed in steps 3 through 6.
9. Terminate the green and yellow wire of the DIN connector as follows:
 - A. Cut the conductors of the green and yellow wire flush with the insulation (Figure 40).

- B. Wrap the end of the green and yellow wire with electrical tape to seal the wire (Figure 40).
- C. Fold the green and yellow wire to the brown wire and wrap the 3 wires together with the electrical tape (Figure 40).

Installing the Agitation Valve Connector

1. Cut off the butt-splice connectors for the pink wire and black wire of the 3-pin adapter (Figure 41).

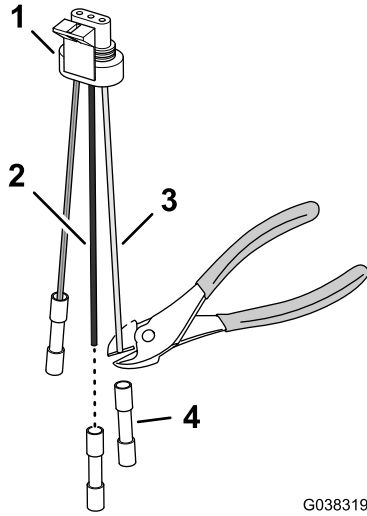


Figure 41

1. 3-pin adapter
2. Black wire
3. Pink wire
4. Butt-splice connector

2. Strip 8 mm (5/16 inch) of insulation from the pink and black wires of the 3-pin adapter (Figure 42).

Note: You will connect the pink and black wires of the 3-pin adapter in [Installing the Master-Spray Valve Connector](#) (page 22).

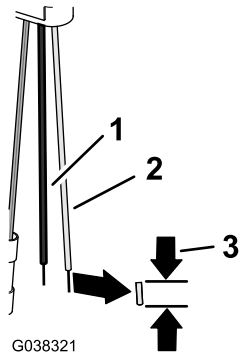


Figure 42

1. Black wire (3-pin adapter)
2. Pink wire (3-pin adapter)
3. Removed section of wire insulation—8 mm (5/16 inch)

3. Align the yellow and green wire of the DIN harness with the white wire of the 3-pin adapter for the agitation-valve (Figure 43); refer to the wire table for the agitation valve.

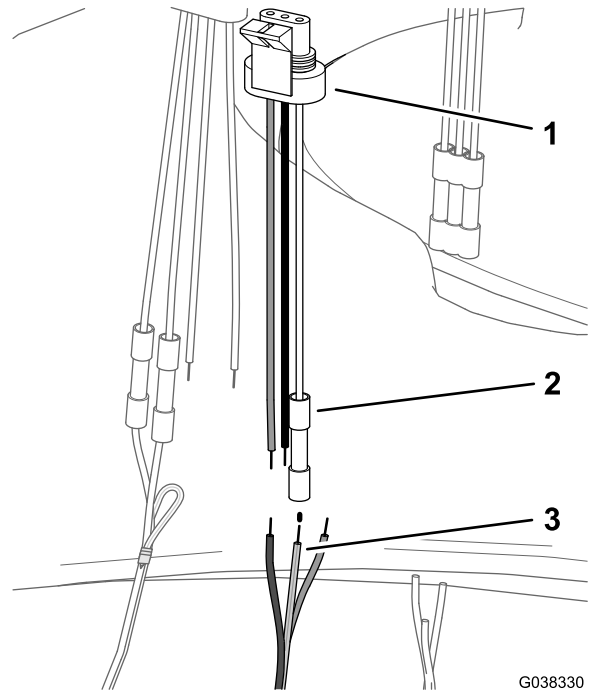


Figure 43

1. 3-pin adapter
2. Butt-splice connector (white wire—agitation valve)
3. Yellow and green wire (DIN harness—agitation valve)

Wiring Table—Agitation Valve

Wire color codes—DIN wire harness	Wire color codes—3-pin adapter (agitation-valve position)
Not applicable	Pink
Not applicable	Black
Yellow/green	White

4. Insert the wire of the DIN wire harness into the butt-splice connector of the 3-pin adapter.
5. Center the crimping tool over the butt-splice connector and wires and crimp the connector securely.
6. Use a heat gun to shrink the insulating sleeve of the butt-splice connector of the wires that you installed in steps 3 through 5.
7. Terminate the brown and blue wire of the DIN connector as follows:
 - A. Cut the conductors of the brown wire and blue wire flush with the insulation (Figure 44).

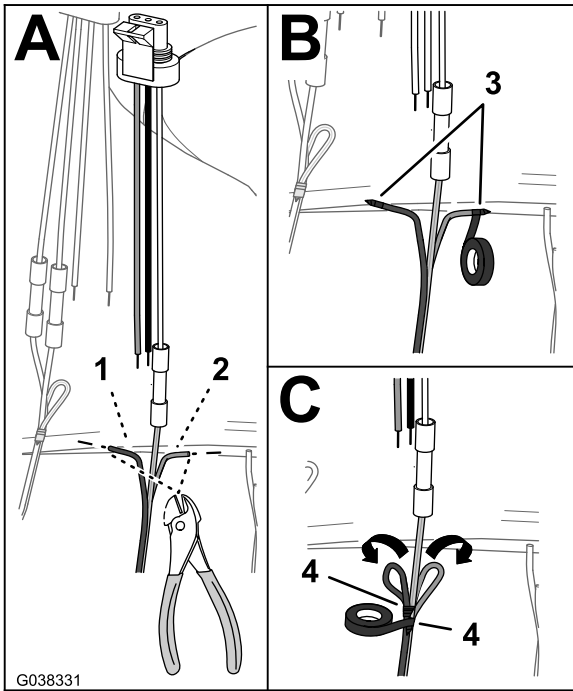


Figure 44

- | | |
|---------------------------------------|---|
| 1. Brown wire (cutting the conductor) | 3. Taping the end of the brown wire and blue wire |
| 2. Blue wire (cutting the conductor) | 4. Taping wires together |

- B. Wrap the end of the brown wire with electrical tape to seal the wire (Figure 44).
- C. Wrap the end of the blue wire with electrical tape to seal the wire (Figure 44).
- D. Fold the brown wire and blue wire to the yellow and green wire and wrap the 3 wires together with the electrical tape (Figure 44).

Installing the Master-Spray Valve Connector

1. Insert the yellow and green wire of the DIN wire harness into the butt-splice connector on the white wire of the 3-pin adapter for the master-spray valve (Figure 45).

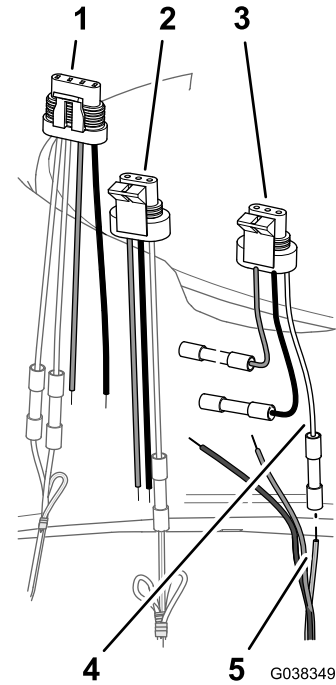


Figure 45

- | | |
|---------------------------------------|--|
| 1. 4-pin adapter (rate valve) | 4. White wire (3-pin adapter—master-spray valve) |
| 2. 3-pin adapter (agitation valve) | 5. Yellow and green wire (DIN wire harness—master-spray valve) |
| 3. 3-pin adapter (master-spray valve) | |

2. Center the crimping tool over the butt-splice connector and wires and crimp the connector securely.
3. Align the black wire of the 4-pin adapter for the rate valve and the black wire of the 3-pin adapter of the agitation valve, and the blue wire of the DIN wire harness with the black wire of the 3-pin adapter for the master-spray valve; refer to the wire table for the master-spray valve (Figure 46).

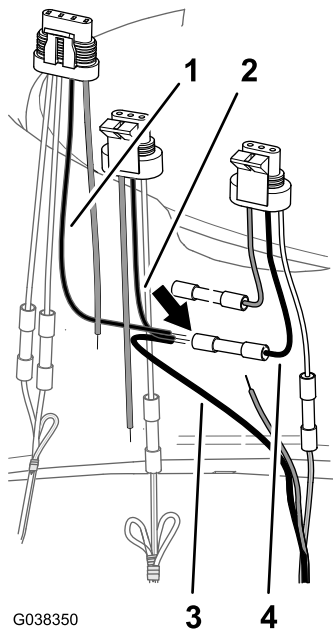


Figure 46

1. Black wire (4-pin adapter—rate valve)
2. Black wire (3-pin adapter—agitation valve)
3. Blue wire (DIN wire harness—master-spray valve)
4. Black wire (3-pin adapter—master-spray valve)

Wiring Table—Master-Spray Valve

Wire color codes—DIN wire harnesses	Wire color codes—4-pin adapter for the rate valve and 3-pin adapter for the agitation valve	Wire color codes—3-pin adapter (master-spray valve)
Brown (master-spray valve)	Pink	Pink
Blue (master-spray valve)	Black	Black
Yellow/green (master-spray valve)	Not applicable	White

4. Insert the black wire of the 4-pin adapter for the rate valve, black wire of the 3-pin adapter of the agitation valve, and blue wires for the DIN wire harness into the butt-splice connector on the black wire of the 3-pin adapter for the master-spray valve.
5. Center the crimping tool over the butt-splice connector and wires and crimp the connector securely.
6. Align the pink wire of the 4-pin adapter for the rate valve and the pink wire of the 3-pin adapter of the agitation valve, and the brown wire of the DIN wire harness with the pink wire of the 3-pin adapter for the master-spray valve; refer to the wire table for the master-spray valve.

7. Insert the pink wire of the 4-pin adapter for the rate valve, pink wire of the 3-pin adapter of the agitation valve, and brown wires for the DIN wire harness into the butt-splice connector on the pink wire of the 3-pin adapter for the master-spray valve.

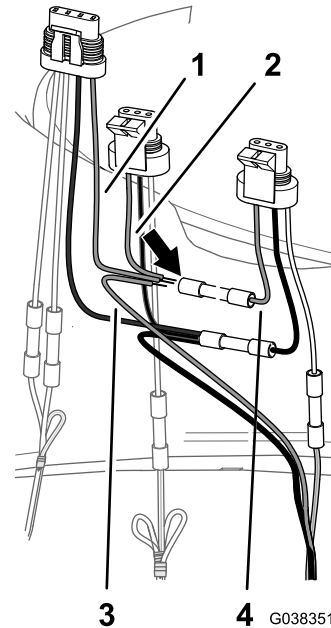


Figure 47

1. Pink wire (4-pin adapter—rate valve)
2. Pink wire (3-pin adapter—agitation valve)
3. Brown wire (DIN wire harness—master spray valve)
4. Pink wire (3-pin adapter—master spray valve)

8. Center the crimping tool over the butt-splice connector and wires and crimp the connector securely.
9. Use a heat gun to shrink the insulating sleeves of the 3 butt-splice connectors.

9

Installing the Valve Manifolds

Parts needed for this procedure:

1	Agitation, rate, and master-spray manifold
1	Section valve manifold

Installing the Agitation, Rate, and Master-Spray Valve Manifold

1. Align the 3 holes in the bracket of the agitation, rate, and master-spray valve with the mount (Figure 48).

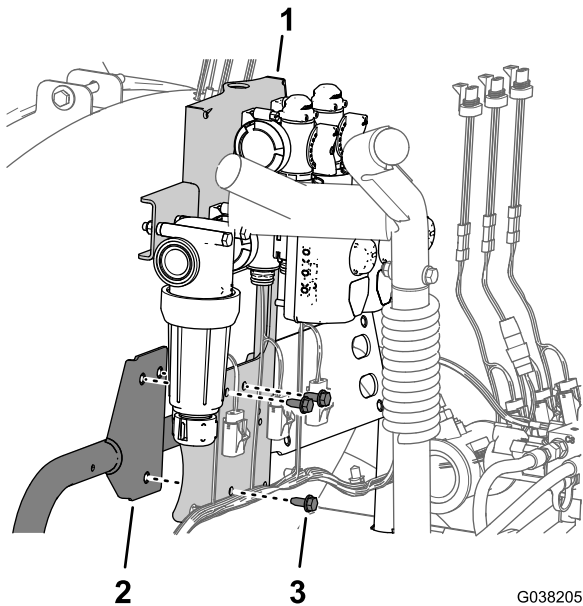


Figure 48

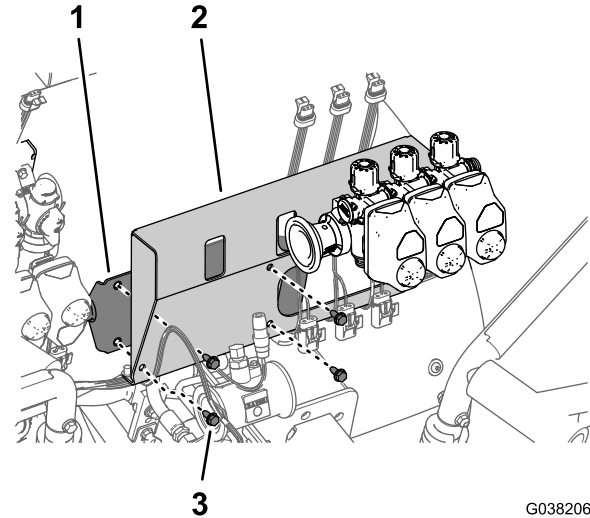
G038205

1. Bracket
2. Mount
3. Flange-head bolts (5/16 x 3/4 inch)

2. Assemble the bracket for the agitation, rate, and master-spray valves to the mount (Figure 48) with the 3 flange-head bolts (5/16 x 3/4 inch) that you removed in step 1 of [Removing the Agitation, Rate, and Master-Spray Valves from the Machine](#) (page 15).
3. Torque the flange-head bolts to 1878 to 2542 N·m (175 to 225 in-lb).

Installing the Section Valve Manifold

1. Align the 4 holes in the bracket for the section-valve with the 4 holes in the mount (Figure 49).



G038206

Figure 49

1. Mount
2. Bracket
3. Flange-head bolt (5/16 x 3/4 inch)

2. Assemble the bracket for the section valve to the bracket mount (Figure 49) with the 4 flange-head bolts (5/16 x 3/4 inch) that you removed in step 1 of [Removing the Boom-Section Valves, Supply Hoses, and Section-Valve Mount](#) (page 13).
3. Torque the flange-head bolts to 1878 to 2542 N·m (175 to 225 in-lb).
4. Secure the wire harness of the machine to the bracket for the agitation, rate, and master-spray valves and the bracket for the section valves with the 5 push-in fasteners (Figure 50).

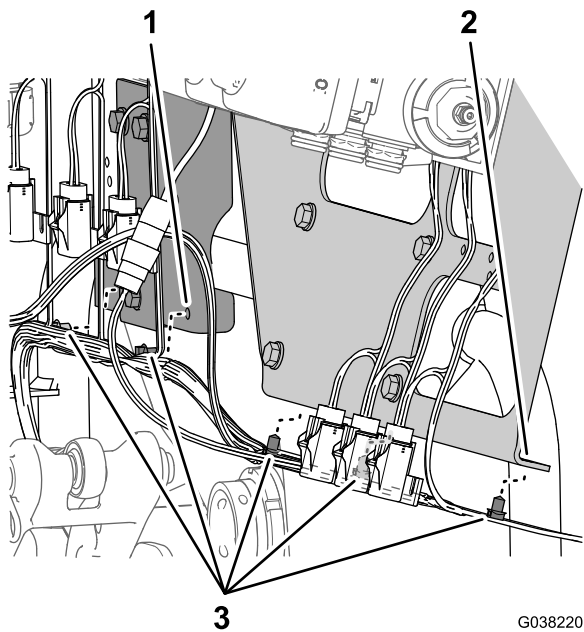


Figure 50

G038220

1. Bracket (agitation, rate, and master-spray valves)
2. Bracket (section valves)
3. Push-in fasteners

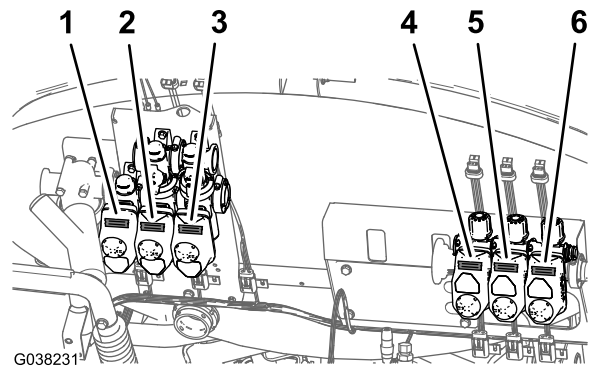


Figure 51

1. Rate valve actuator
2. Agitation valve actuator
3. Master spray-valve actuator
4. Left spray-valve actuator
5. Center spray-valve actuator
6. Left spray-valve actuator

2. Remove the retainer that secures the valve actuator to the manifold valve and separate the actuator from the valve (Figure 52).

Note: Retain the valve actuator and retainer for installation in [Assembling the Valve Actuator to the Manifold Valve](#) (page 27).

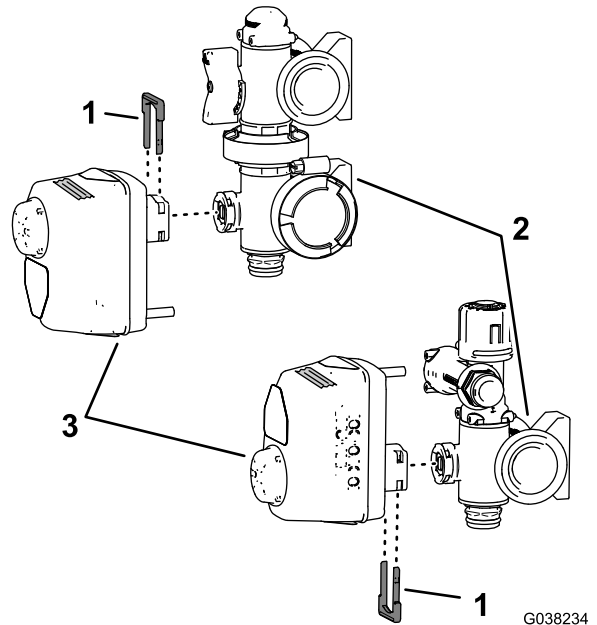


Figure 52

G038234

1. Retainer
2. Manifold valve
3. Valve actuator

10

Installing the Flow Meter and Hoses

Parts needed for this procedure:

1	Flow-meter hose—25 x 289 mm (1 x 11-3/8 inches)
---	---

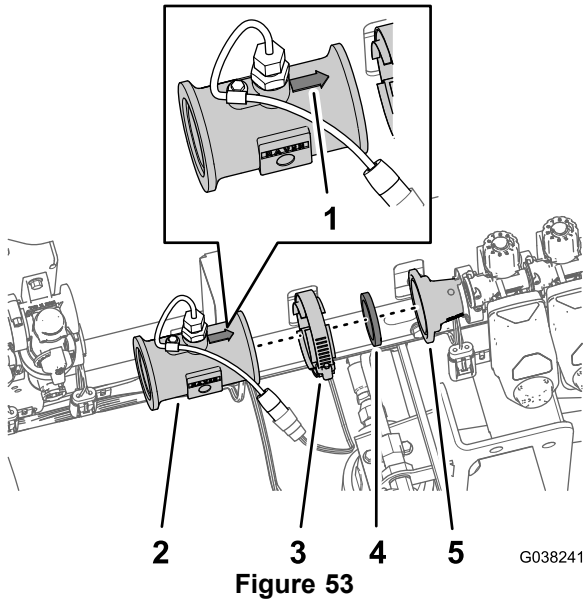
Removing the Valve Actuators

Note: Perform this procedure if you need additional clearance when installing the hose assemblies at the bottom quick-connect port of the manifold valve(s).

1. With pieces of masking tape, name the position of the valve actuator(s) as shown in [Figure 51](#).

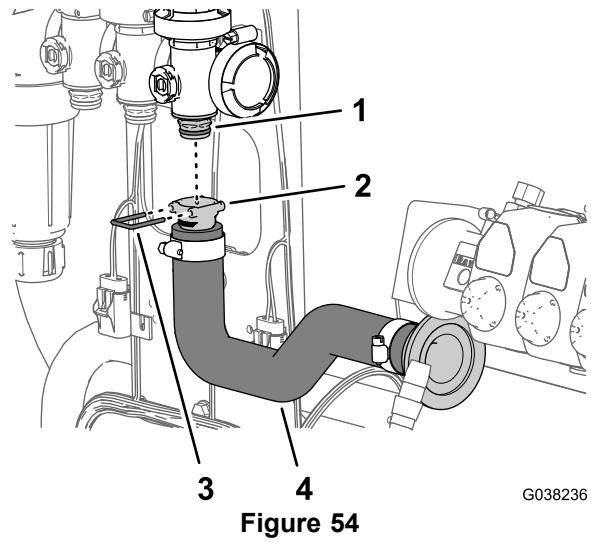
Installing the Flow Meter

1. Align the flow meter to the reducer adapter at the left spray valve with the arrow of the flow meter pointing right (Figure 53).



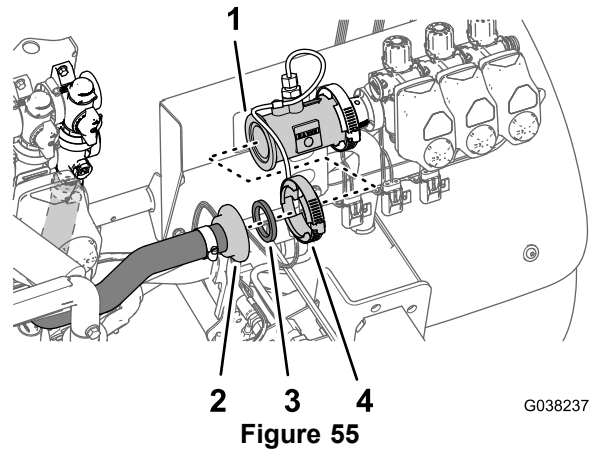
- | | |
|-----------------|---------------------------------------|
| 1. Arrow | 4. Gasket |
| 2. Flow meter | 5. Reducer adapter (left spray valve) |
| 3. Flange clamp | |

2. Assemble the flow meter to the reducer adapter with the gasket and flange clamp (Figure 53) that you removed in step 2 and 3 of [Removing the Flow Meter from the Valve Manifolds](#) (page 12).
3. Assemble quick-connect fitting of the flow-meter hose with the quick-connect fitting at the master-spray valve (Figure 54).



- | | |
|---|--------------------|
| 1. Quick-connect fitting (master-spray valve) | 3. Retainer |
| 2. Quick-connect fitting (flow-meter hose) | 4. Flow-meter hose |

4. Secure the hose fitting to the valve fitting with the retainer (Figure 54) that is provided with the flow-meter hose.
5. Align the barbed flange fitting of the flow-meter hose and the gasket that you removed in step 3 of [Removing the Flow Meter from the Valve Manifolds](#) (page 12) with the flange at the inlet of the flow meter (Figure 55).



- | | |
|--------------------------|-----------------|
| 1. Flange (flow meter) | 3. Gasket |
| 2. Barbed flange fitting | 4. Flange clamp |

6. Secure the flow-meter hose to the flow meter with a clamp (Figure 55) that you removed in step 1 of [Removing the Flow Meter from the Valve Manifolds](#) (page 12)

Assembling the Valve Actuator to the Manifold Valve

Perform this procedure if you removed the valve actuator (s) to install the hose assemblies onto the manifold valve(s).

1. Align valve actuator that you identified in step 1 of [Removing the Valve Actuators \(page 25\)](#) with the manifold valve position shown in [Figure 51](#).
2. Secure the valve actuator to the manifold valve with the retainer that you removed in step 2 of [Removing the Valve Actuators \(page 25\)](#).

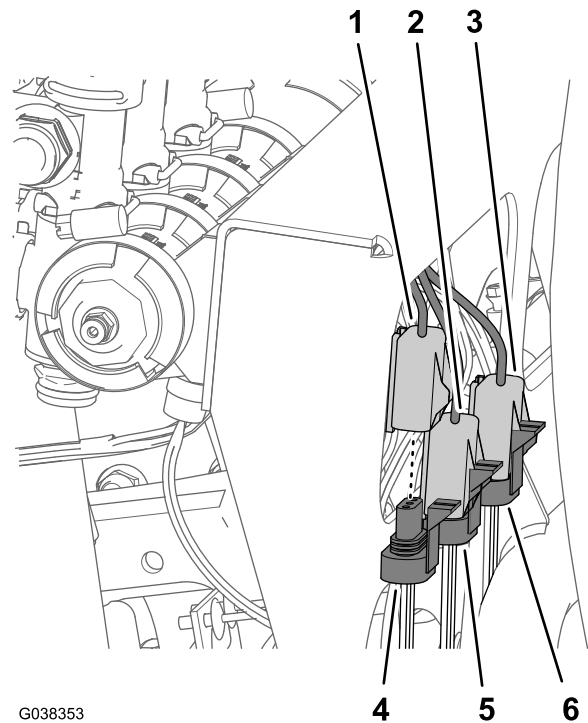
11

Connecting the Wiring Harness to the Valves

No Parts Required

Connecting the Electrical Connectors for the Section Valve

1. Connect the 3-pin valve harness labeled LEFT SPRAY VALVE into the 3-socket connector for the left spray valve ([Figure 56](#)).



G038353

Figure 56

- | | |
|--|---|
| 1. 3-socket valve harness (right spray valve) | 4. 3-pin valve harness (right spray valve) |
| 2. 3-socket valve harness (center spray valve) | 5. 3-pin valve harness (center spray valve) |
| 3. 3-socket valve harness (left spray valve) | 6. 3-pin valve harness (left spray valve) |

2. Connect the 3-pin valve harness labeled CENTER SPRAY VALVE into the 3-socket connector for the center spray valve ([Figure 56](#)).
3. Connect the 3-pin valve harness labeled RIGHT SPRAY VALVE into the 3-socket connector for the right spray valve ([Figure 56](#)).

Connecting the Electrical Connectors for the Rate Valve, Agitation Valve, and Master-Spray Valve

1. Connect the 3-pin valve harness labeled MASTER-SPRAY VALVE into the 3-socket connector for the master-spray valve (Figure 57).

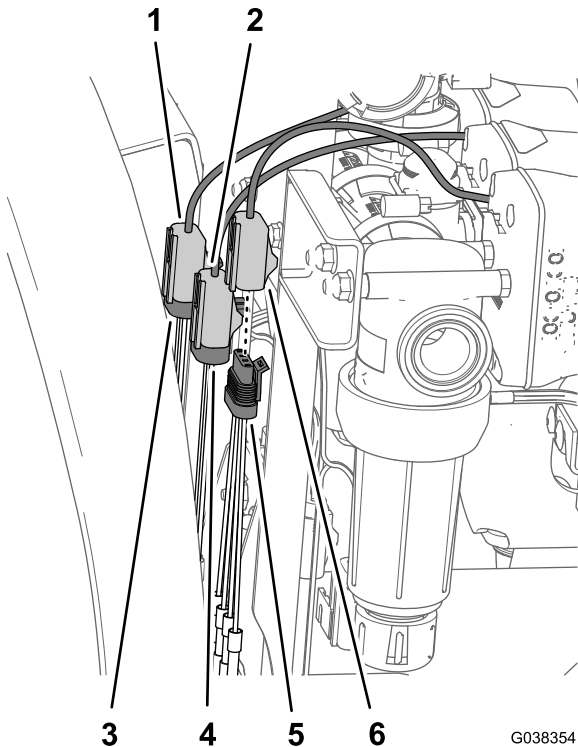


Figure 57

- | | |
|--|---|
| 1. 3-socket valve harness (master-spray valve) | 4. 3-pin adapter harness (master-spray valve) |
| 2. 3-socket valve harness (agitation valve) | 5. 3-pin adapter harness (agitation valve) |
| 3. 4-socket valve harness (rate switch) | 6. 4-pin adapter harness (rate switch) |

2. Connect the 3-pin valve harness labeled AGITATION VALVE into the 3-socket connector for the agitation valve (Figure 57).
3. Connect the 4-pin valve harness labeled RATE VALVE into the 4-socket connector for the rate valve (Figure 57).

12

Assembling the Agitation Throttle Valve and Eductor-Shutoff Valve for Machines with the Optional Eductor Kit

Parts needed for this procedure:

1	Handle
1	Screw (6-32 x 5/8 inch)
1	Agitation throttle valve
1	Bracket (nylon)
1	Agitation-valve bracket
4	Bolt (6 x 12 mm)
1	Eductor-shutoff valve
1	Eductor-shutoff bracket
4	Flange locknut (1/4 inch)
2	Flange-head bolt (5/16 x 3/4 inch)

Assembling the Agitation Throttle Valve

1. Assemble the handle to the agitation throttle valve (Figure 58) with the screw (6-32 x 5/8 inch).

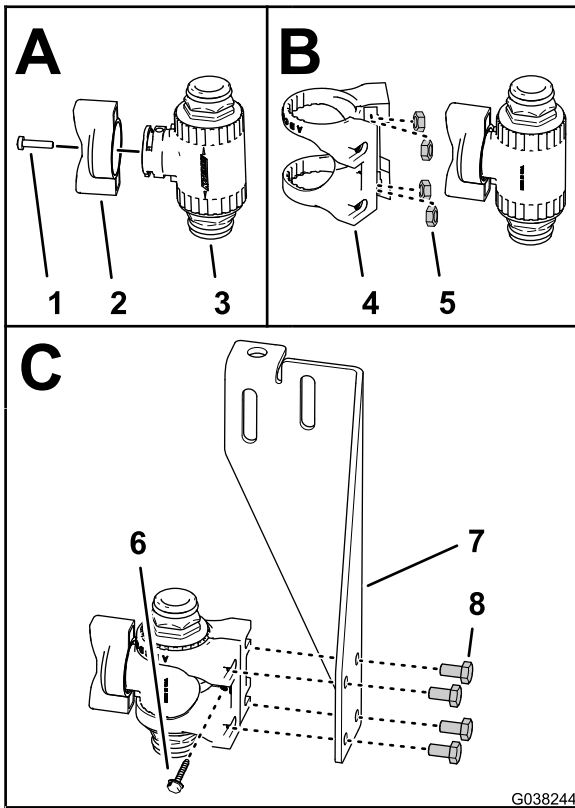


Figure 58

- | | |
|---------------------------------|--|
| 1. Screw (6-32 x 5/8 inch) | 5. Nut—stainless steel (6 mm—throttle-valve mount) |
| 2. Handle | 6. Washer-head screw (#6—throttle-valve mount) |
| 3. Agitation throttle valve | 7. Agitation-valve bracket |
| 4. Throttle-valve mount (nylon) | 8. Bolt (6 x 12 mm) |

- If not assembled, insert the 4 stainless steel nuts into the slots in the nylon throttle-valve mount for the agitation throttle valve (Figure 58).
- Assemble the agitation throttle valve into the throttle-valve mount as shown in (Figure 58)
- Secure the throttle-valve mount to the agitation throttle valve with the screw (6-32 x 5/8 inch) as shown in (Figure 58).
- Assemble the throttle valve and mount to the agitation-valve bracket (Figure 58) with the 4 bolt (6 x 12 mm).

Assembling the Eductor–Shutoff Valve for Machines with the Optional Eductor Kit

- Align the hose in the eductor-shutoff bracket with the studs of the eductor-shutoff valve as shown in Figure 59.

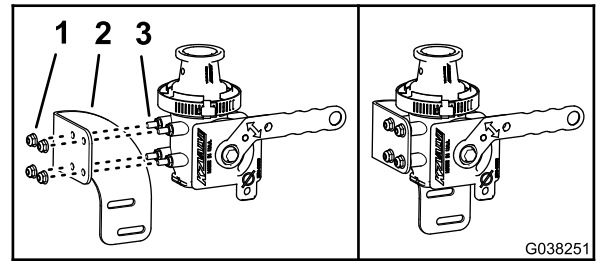


Figure 59

- | | |
|------------------------------|---------------------------------|
| 1. Flange locknut (1/4 inch) | 3. Stud (eductor-shutoff valve) |
| 2. Eductor-shutoff bracket | |

- Assemble the bracket to the valve (Figure 59) with the 4 flange locknuts (1/4 inch)
- Torque the flange locknuts to 1017 to 1243 N·cm (90 to 110 in-lb).

Assembling the Throttle Valve for Machines without the Optional Eductor Kit

Note: If your machine has the optional eductor kit, skip to [Assembling the Throttle Valve and Eductor-Shutoff Valve for Machines with the Optional Eductor Kit](#) (page 30).

- Align the slots in the agitation-valve bracket with the holes in the mount for the throttle-valve bracket (Figure 60).

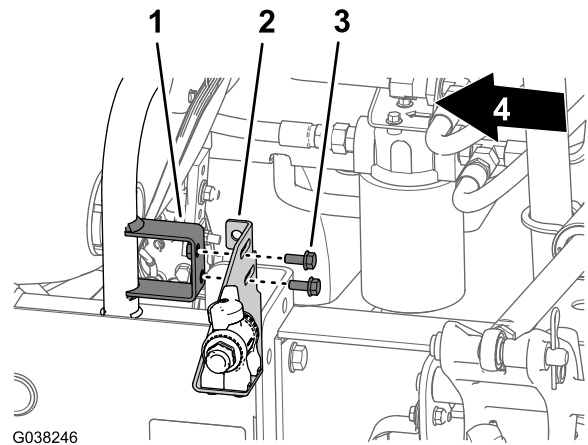


Figure 60

- | | |
|-----------------------------------|---------------------------------------|
| 1. Mount (throttle-valve bracket) | 3. Flange-head bolt (5/16 x 3/4 inch) |
| 2. Agitation-valve bracket | 4. Front of the machine |

2. Assemble the agitation-valve bracket to the mount for the throttle-valve bracket (Figure 60) with 2 flange-head bolts (5/16 x 3/4 inch).
3. Torque the flange-head bolts to 1978 to 2542 (175 to 225 in-lb).

13

Installing the Agitation-Nozzle Assembly and Hoses

Parts needed for this procedure:

1	Agitation-nozzle assembly
---	---------------------------

Procedure

1. Insert the 3 agitation nozzles of the agitation-nozzle assembly into the bulkhead fittings of the sprayer tank (Figure 62).

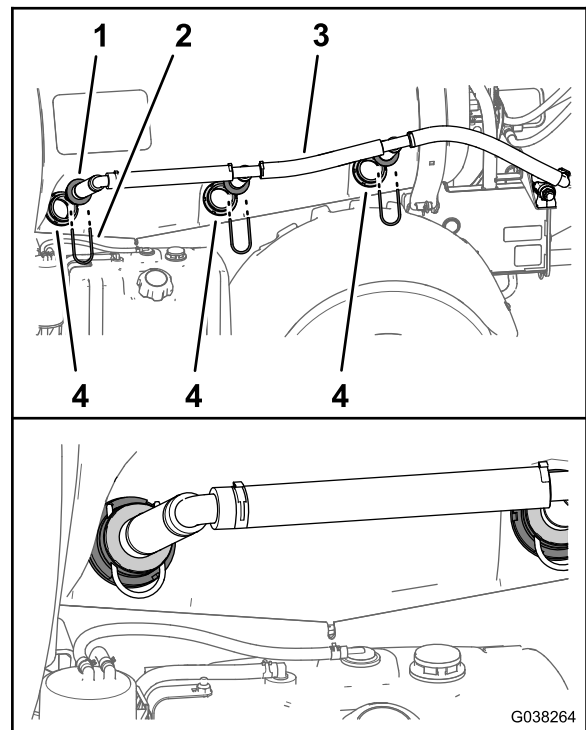


Figure 62

- | | |
|---|------------------------------|
| 1. Agitation nozzle (agitation-nozzle assembly) | 3. Agitation-nozzle assembly |
| 2. Retainer | 4. Bulkhead fitting |

2. Secure the agitation nozzles with the 3 retainers (Figure 62) that you removed in step 1 of [Removing the Agitation Nozzles from the Sprayer Tank](#) (page 13).
3. Assemble the 90° quick-connect fitting of the agitation-nozzle assembly onto the quick coupling of the agitation throttle valve with the retainer that is supplied with the agitation-hose assembly (Figure 63).

Assembling the Throttle Valve and Eductor-Shutoff Valve for Machines with the Optional Eductor Kit

1. Align the slots in the agitation-throttle bracket and the slots in the eductor-shutoff bracket with the holes in the mount for the throttle-valve bracket (Figure 61).

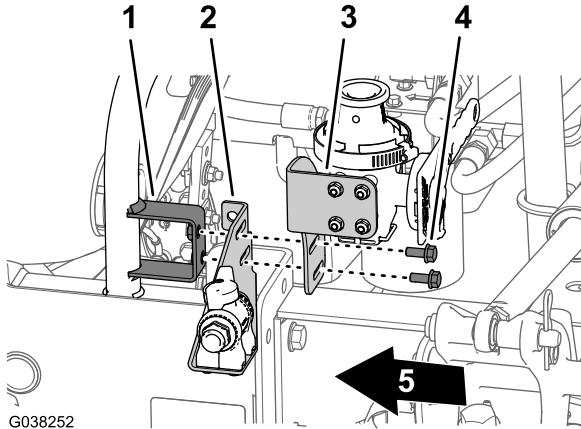


Figure 61

- | | |
|--------------------------------|---------------------------------------|
| 1. Agitation throttle bracket) | 4. Flange-head bolt (5/16 x 3/4 inch) |
| 2. Bracket (throttle valve) | 5. Front of the machine |
| 3. Eductor-shutoff bracket | |

2. Assemble the agitation-valve bracket and eductor-shutoff bracket to the mount for the throttle-valve bracket (Figure 61) with 2 flange-head bolts (5/16 x 3/4 inch).
3. Torque the flange-head bolts to 1978 to 2542 (175 to 225 in-lb).

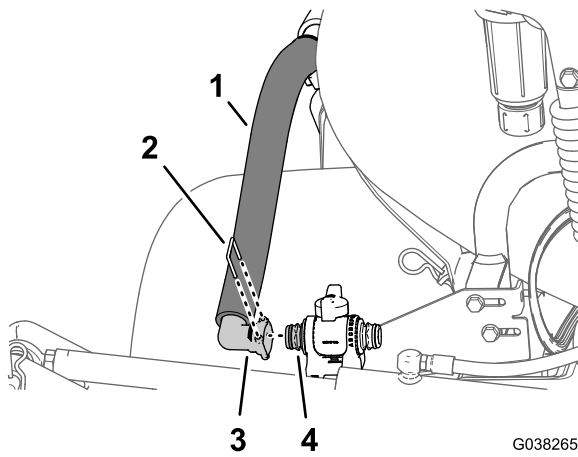


Figure 63

- 1. Agitation-nozzle assembly
- 2. Retainer
- 3. 90° quick-connect fitting
- 4. Quick-connect fitting (agitation throttle valve)

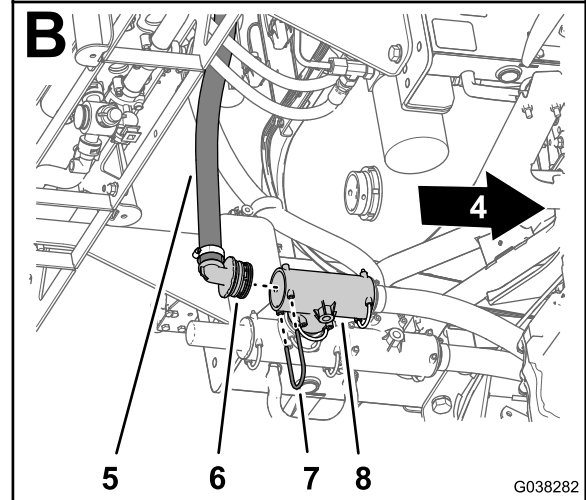
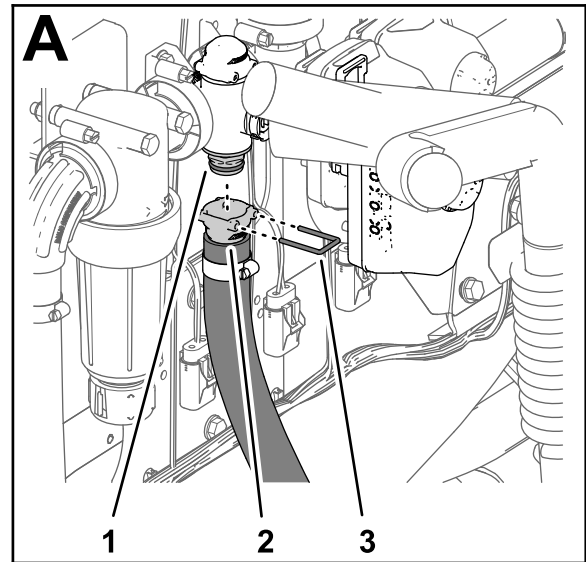


Figure 64

- 1. Quick-connect fitting (rate control valve)
- 2. Quick-connect fitting (straight barbed—return hose)
- 3. Retainer (small)
- 4. Front of the machine
- 5. Return hose—2.5 x 71 cm (1 x 27-7/8 inches)
- 6. 90° barbed fitting
- 7. Retainer (large)
- 8. T-fitting (inboard)

14

Installing the Return Hose, Agitation Supply Hose, and Bypass Hose

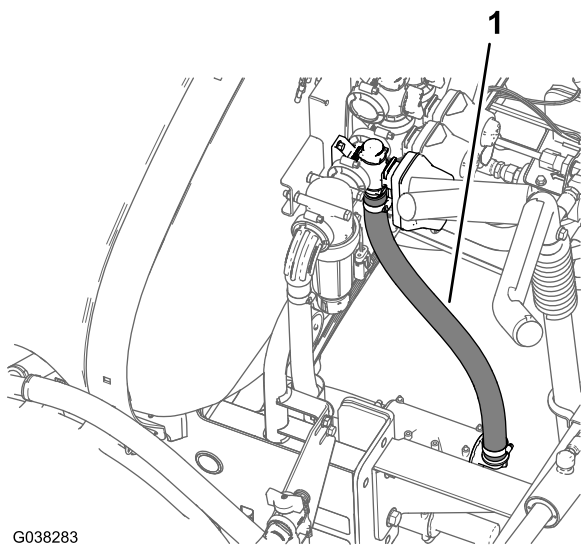
Parts needed for this procedure:

1	Return hose—2.5 x 72 cm (1 x 27-7/8 inches)
1	Agitation supply hose—2.5 x 72 cm (1 x 28-1/4 inches)
1	Bypass hose—2.5 x 110 cm (1 x 43-1/2 inches)—machines without the optional spray wand or electric hose reel kit

Installing the Return Hose

- Assemble the quick-connect fitting (straight barbed) of the return hose—2.5 x 71 cm (1 x 27-7/8 inches) onto the quick coupling of the rate valve with the retainer (small) that is supplied with the hose (Figure 64).

- Route the return hose down and toward the T-fitting located inboard of the pressure-relief valve as shown in Figure 65.



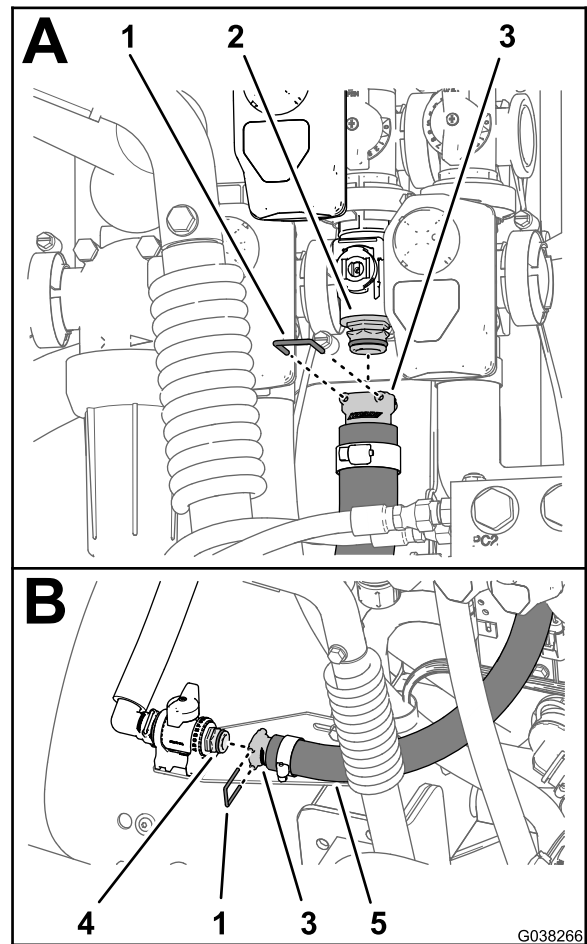
G038283

Figure 65

1. Return hose—2.5 x 71 cm (1 x 27-7/8 inches)
-
3. Assemble the 90° barbed fitting of the return hose into the rear port of the inboard T-fitting (Figure 64).
 4. Secure the 90° fitting to the T-fitting with the retainer (large) that you removed in step 1 of [Disconnecting the Return, Sprayer-Supply, and Bypass Hoses](#) (page 14).

Installing the Agitation Supply Hose

1. Assemble the quick-connect fitting (straight barbed) of the agitation supply hose—2.5 x 72 cm (1 x 28-1/4 inches) onto the quick coupling of the agitation control valve with the retainer that is supplied with the hose (Figure 66).

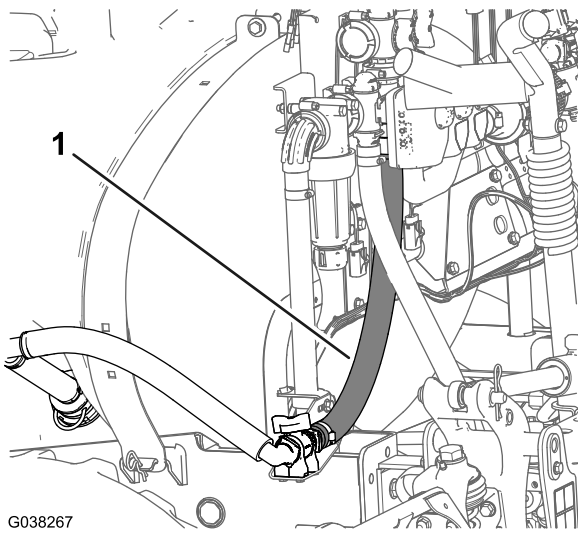


G038266

Figure 66

- | | |
|--|--|
| 1. Retainer | 4. Quick-connect fitting (agitation throttle valve) |
| 2. Quick-connect fitting (agitation control valve) | 5. Agitation supply hose—2.5 x 72 cm (1 x 28-1/4 inches) |
| 3. Quick-connect fitting (straight barbed) | |

2. Route the hose to the agitation throttle valve (Figure 67).



G038267

Figure 67

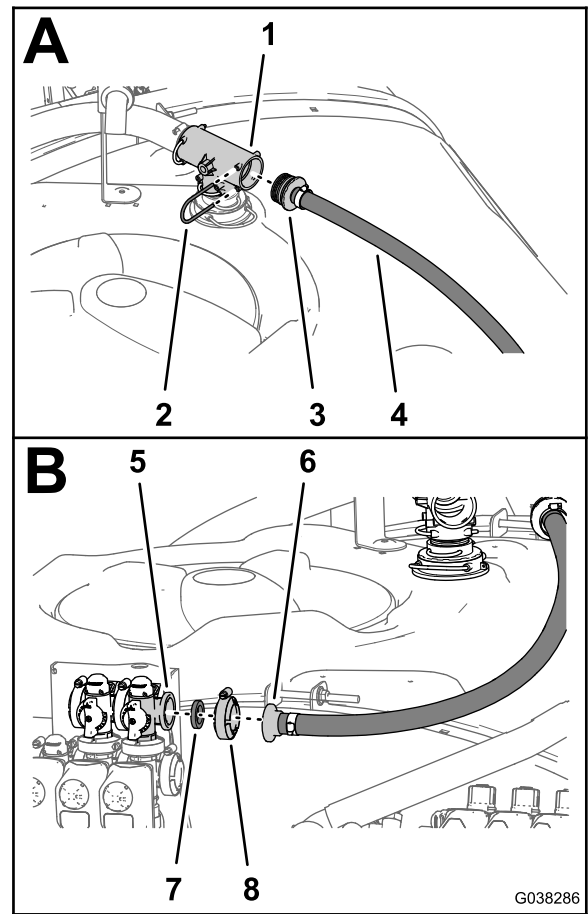
1. Agitation supply hose—2.5 x 72 cm (1 x 28-1/4 inches)

3. Assemble the quick-connect fitting (straight barbed) of the agitation supply hose onto the quick coupling of the agitation throttle valve with the retainer that is supplied with the hose (Figure 67).

Installing the Bypass Hose—Machines without the Optional Spray Wand Kit or Electric Hose Reel Kit

If your machine has the optional spray wand kit or electric hose reel kit, skip this procedure. You will install the bypass hose in [17 Installing the Shutoff Valve and Hoses for the Optional Spray Gun Kit or Electric Hose-Reel Kit \(page 40\)](#).

1. Assemble the straight barbed fitting of the bypass hose—2.5 x 110 cm (1 x 43-1/2 inches) into the rear port of the T-fitting at the top of the sprayer tank (Figure 68).



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Figure 68

- | | |
|---|--|
| 1. T-fitting | 5. Flange—bypass valve (master-spray valve position) |
| 2. Retainer | 6. Straight barbed fitting |
| 3. Straight barbed fitting | 7. Gasket—25 x 35 mm (1 x 1-3/8 inches) |
| 4. Bypass hose—2.5 x 110 cm (1 x 43-1/2 inches) | 8. Flange clamp—40 to 64 mm (1-9/16 to 2-1/2 inches) |

2. Secure the straight barbed fitting to the T-fitting with the retainer that you removed in step 5 of [Disconnecting the Return, Sprayer-Supply, and Bypass Hoses \(page 14\)](#).
3. Route the bypass hose to the bypass valve located above the master-spray valve as shown in [Figure 69](#).

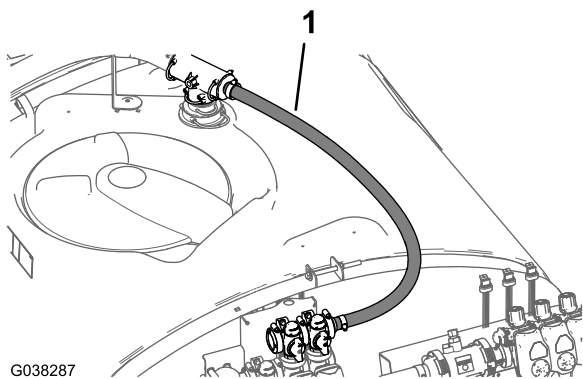


Figure 69

1. Bypass hose—2.5 x 110 cm (1 x 43-1/2 inches)
-
4. Align the flange of the straight barbed fitting and gasket—25 x 35 mm (1 x 1-3/8 inches) with the flange of the bypass valve ([Figure 68](#)).
 5. Secure the straight barbed fitting to the bypass valve ([Figure 69](#)) with a flange clamp—40 to 64 mm (1-9/16 to 2-1/2 inches).

15

Installing the Sprayer Supply Hose

Parts needed for this procedure:

1	Sprayer supply hose—2.5 x 73 cm (1 x 28-7/8 inches)—machines without the optional eductor kit
2	Flange clamp—40 to 64 mm (1-9/16 to 2-1/2 inches)
2	Gasket—25 x 35 mm (1 x 1-3/8 inches)
1	Support clamp—machines without the optional eductor kit
1	Flange-head bolt (5/16 x 3/4 inch)—machines without the optional eductor kit
1	Flange locknut (5/16 inch)—machines without the optional eductor kit
1	Lower supply hose—25 x 66 cm (1 x 25-3/4 inches) machines with the optional eductor kit
1	Retainer (small)—machines with the optional eductor kit
1	Upper supply hose—25 x 22 cm (1 x 8-5/8 inches) machines with the optional eductor kit

Installing the Sprayer Supply Hose—Machine without the Optional Eductor Kit

If your machine has the optional eductor kit, skip to [Installing the Lower Sprayer Supply Hose—Machines with the Optional Eductor Kit](#) (page 36).

1. Align the 90° flanged elbow of the sprayer supply hose—2.5 x 73 cm (1 x 28-7/8 inches) with a gasket—25 x 35 mm (1 x 1-3/8 inches) to the flange of the filter head ([Figure 70](#)).

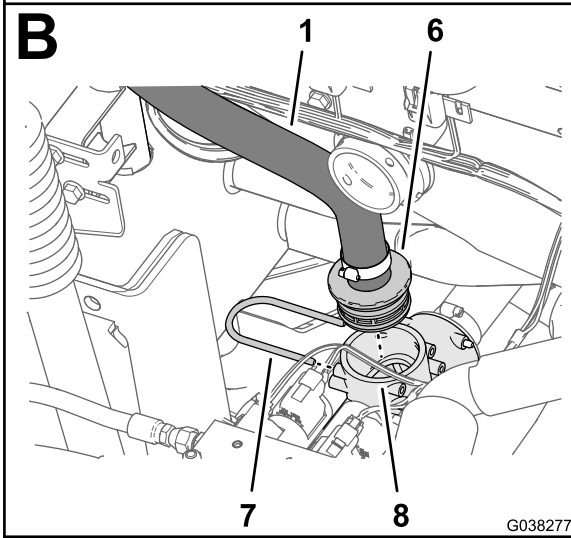
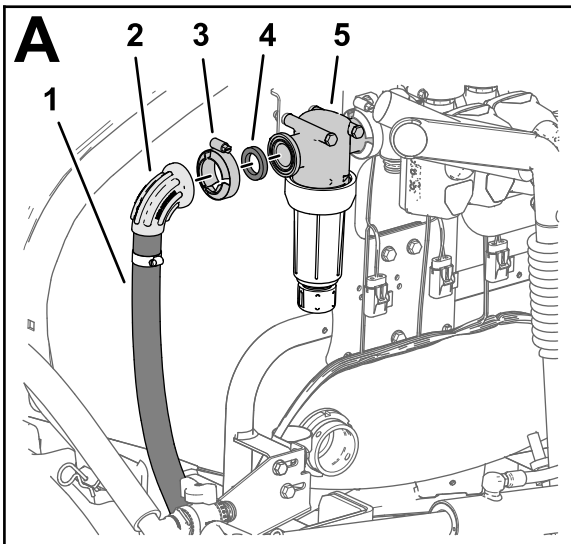


Figure 70

- | | |
|--|---------------------------------------|
| 1. Sprayer supply hose—2.5 x 73 cm (1 x 28-7/8 inches) | 5. Filter head |
| 2. 90° flanged elbow | 6. Straight barbed fitting |
| 3. Flange clamp—40 to 64 mm (1-9/16 to 2-1/2 inches) | 7. Retainer |
| 4. Gasket—25 x 35 mm (1 x 1-3/8 inches) | 8. T-fitting (forward, left position) |

- Loosely assemble the sprayer supply hose and gasket to the filter head (Figure 70) with a flange clamp—40 to 64 mm (1-9/16 to 2-1/2 inches).
- Route the sprayer supply hose down and toward the T-fitting located forward of the pressure-relief valve as shown in Figure 71.

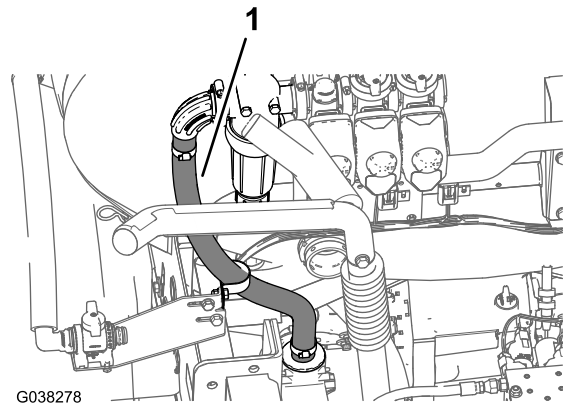


Figure 71

- Sprayer supply hose—2.5 x 73 cm (1 x 28-7/8 inches)

- Assemble the straight barbed fitting of the sprayer supply hose into the forward, left T-fitting (Figure 70).
- Secure the barbed fitting to the T-fitting with the retainer that you removed in step 3 of [Disconnecting the Return, Sprayer-Supply, and Bypass Hoses](#) (page 14).
- Secure the hose to the sprayer supply hose to the tab of the agitation-valve bracket (Figure 72) with the flange-head bolt (5/16 x 3/4 inch) and flange locknut (5/16 inch).

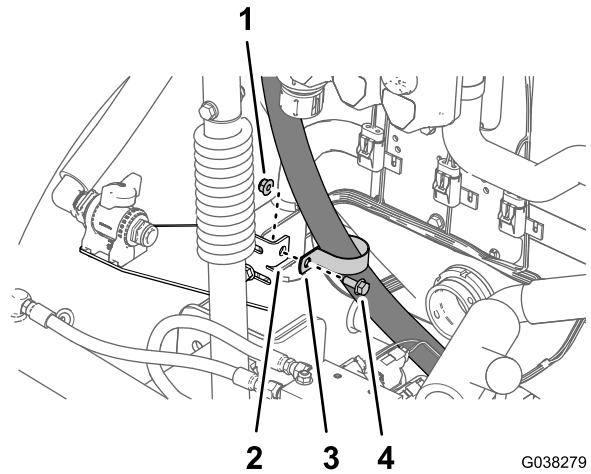


Figure 72

- | | |
|-------------------------------|---------------------------------------|
| 1. Flange locknut (5/16 inch) | 3. Support clamp |
| 2. Agitation-valve bracket | 4. Flange-head bolt (5/16 x 3/4 inch) |

- Tighten the flange clamp that secures the 90° flanged elbow of the sprayer supply hose to the filter head (Figure 70).

Installing the Lower Sprayer Supply Hose—Machines with the Optional Educator Kit

1. Assemble the straight barbed fitting of the lower supply hose—25 x 66 cm (1 x 25-3/4 inches) into the port of the educator-shutoff valve (Figure 73).

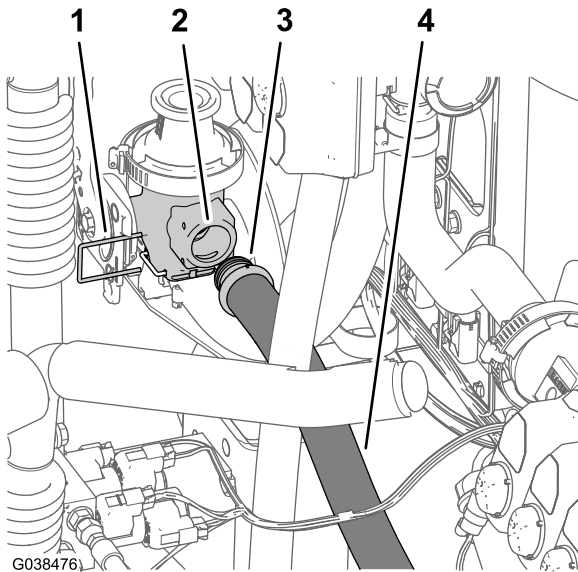


Figure 73

- | | |
|----------------------------------|---|
| 1. Retainer (small) | 3. Straight barbed fitting |
| 2. Port (educator-shutoff valve) | 4. Lower supply hose—25 x 66 cm (1 x 25-3/4 inches) machines with the optional educator kit |

2. Secure the barbed fitting to the port with a retainer
3. Route the sprayer supply hose down and toward the T-fitting located forward of the pressure-relief valve as shown in Figure 74.

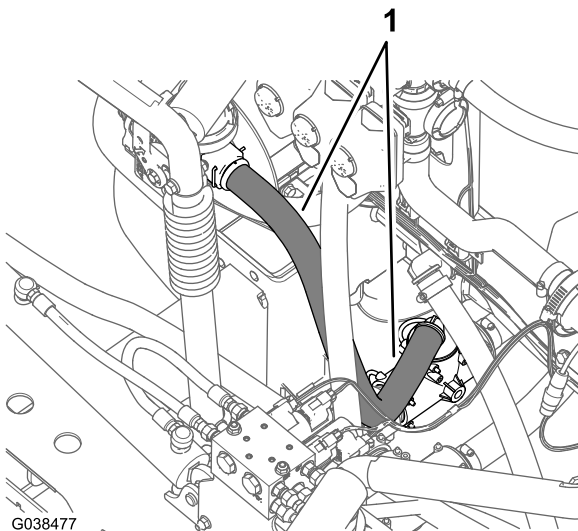


Figure 74

1. Lower supply hose—25 x 66 cm (1 x 25-3/4 inches)

4. Assemble the 90° barbed fitting of the sprayer supply hose into the forward, left T-fitting (Figure 75).

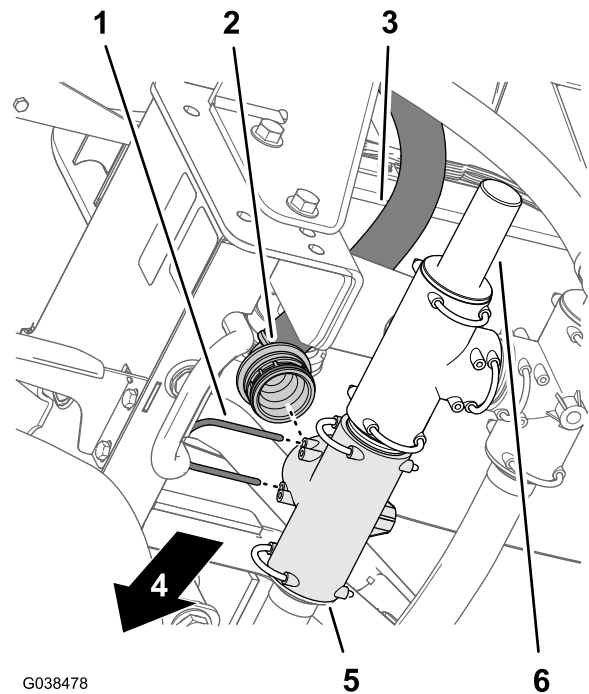


Figure 75

- | | |
|---|--------------------------|
| 1. Retainer | 4. Front of the machine |
| 2. 90° barbed fitting (sprayer supply hose) | 5. T-fitting |
| 3. Lower supply hose—25 x 66 cm (1 x 25-3/4 inches) | 6. Pressure-relief valve |

5. Secure the barbed fitting to the T-fitting with the retainer that you removed in step 3 of [Disconnecting the Return, Sprayer-Supply, and Bypass Hoses](#) (page 14).

Installing the Upper Sprayer Supply Hose—Machines with the Optional Educator Kit

1. Align the straight barbed fitting of the upper supply hose 25 x 22 cm (1 x 8-5/8 inches) and a gasket—25 x 35 mm (1 x 1-3/8 inches) with the flange of the adapter on the educator-shutoff valve (Figure 76).

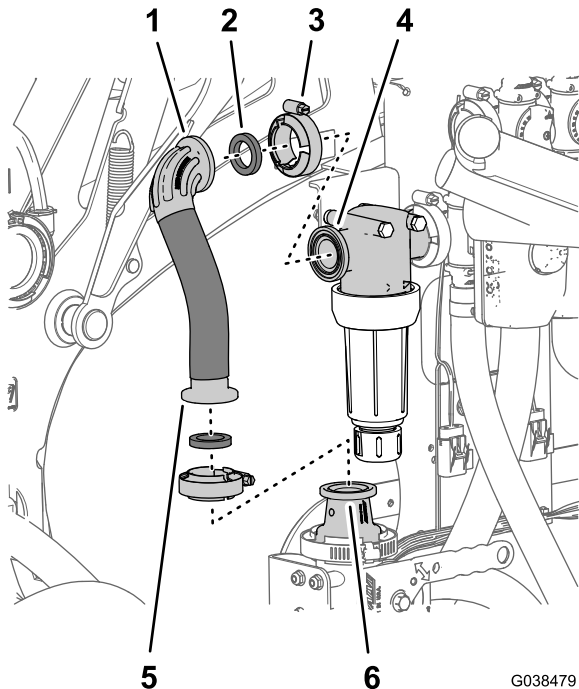


Figure 76

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- | | |
|--|-------------------------------------|
| 1. 90° flanged elbow—upper supply hose 25 x 22 cm (1 x 8-5/8 inches) | 4. Filter head |
| 2. Gasket—25 x 35 mm (1 x 1-3/8 inches) | 5. Straight barbed fitting |
| 3. Flange clamp—40 to 64 mm (1-9/16 to 2-1/2 inches) | 6. Adapter (educator-shutoff valve) |

2. Loosely assemble the hose to the adapter (Figure 76) with a flange clamp—40 to 64 mm (1-9/16 to 2-1/2 inches).
3. Align the 90° flanged elbow of the upper supply hose and the gasket to the flange of the filter head (Figure 76).
4. Secure the 90° flanged elbow to the filter head (Figure 76) with a flange clamp—40 to 64 mm (1-9/16 to 2-1/2 inches).
5. Tighten the flange clamp that secures straight barbed fitting of the upper supply hose to the adapter of the educator-shutoff valve (Figure 76).

16

Installing the Section Spray Valve Hoses

Parts needed for this procedure:

1	Section bypass hose—2.5 x 146 cm (1 x 57-1/2 inches)
1	Supply hose—left-boom section—2 x 205 cm (3/4 x 80-13/16 inches)
1	Supply hose—center-boom section—2 x 58 cm (3/4 x 22-13/16 inches)
1	Supply hose—right-boom section—2 x 170 cm (3/4 x 66-13/16 inches)

Installing the Section Bypass Hose

For machines without the optional spray gun kit or the optional electric hose reel kit.

Note: If you are installing the valve conversion kit on a machine with the optional hand spray wand kit or the optional electric hose reel kit, skip this procedure. You will install the section bypass hose in [Installing the Section Bypass Hose—Machines with the Optional Spray Gun Kit or the Optional Electric Hose Reel Kit](#) (page 46).

1. Assemble the 90° quick-connect fitting of the section bypass hose—2.5 x 146 cm (1 x 57-1/2 inches) onto the quick coupling of the bypass manifold with the retainer (small) that is supplied with the section bypass hose (Figure 77).

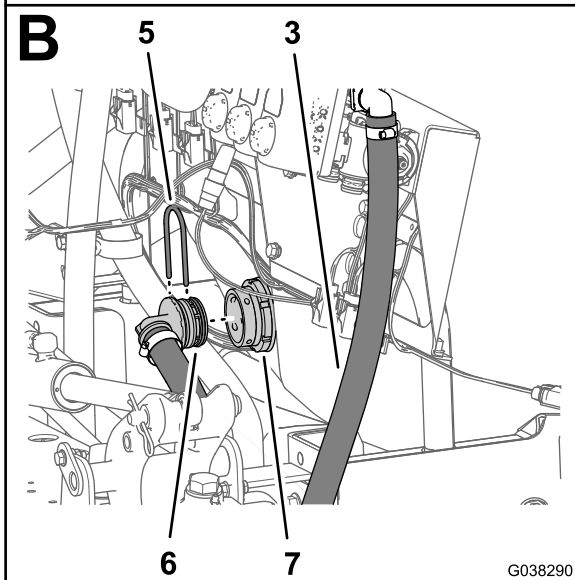
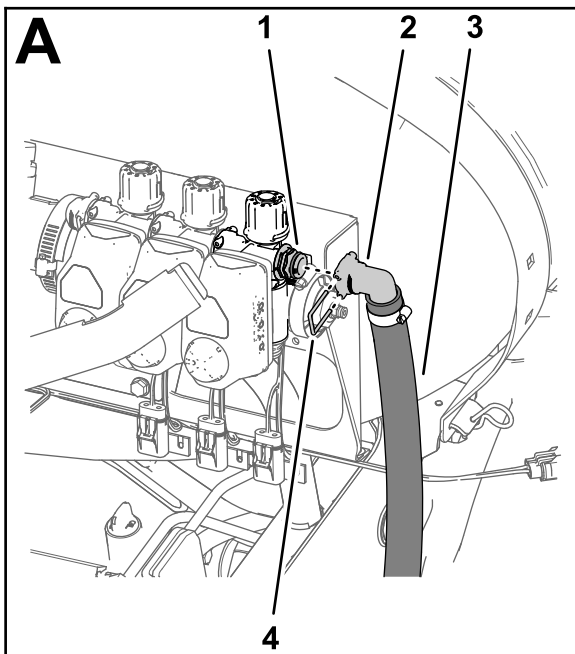


Figure 77

- | | |
|---|------------------------------------|
| 1. Quick-connect fitting (bypass manifold) | 5. Retainer (large) |
| 2. 90° quick-connect fitting | 6. 90° barbed fitting |
| 3. Section bypass hose—2.5 x 146 cm (1 x 57-1/2 inches) | 7. Bulkhead fitting (sprayer tank) |
| 4. Retainer (small) | |

- Route the section bypass hose around the right frame channel toward the bulkhead fitting in the sprayer tank as shown in [Figure 78](#).

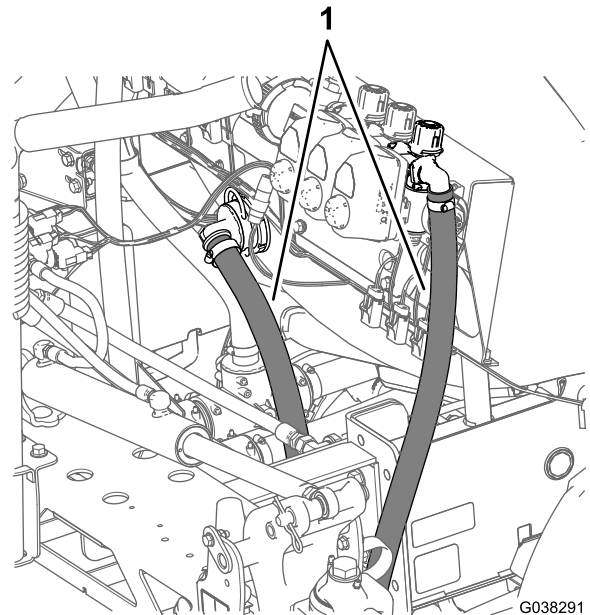


Figure 78

- Section bypass hose—2.5 x 146 cm (1 x 57-1/2 inches)
- Assemble the 90° barbed fitting of the section bypass hose into the bulkhead fitting ([Figure 77](#)).
- Secure the 90° fitting to the bulkhead fitting ([Figure 77](#)) with the retainer (large) that you removed in step 1 of [Removing the Section Bypass Hose](#) (page 16).

Installing the Section Supply Hoses

- Route the left, center, and right boom-supply hoses to the boom-section valves as shown in [Figure 79](#).

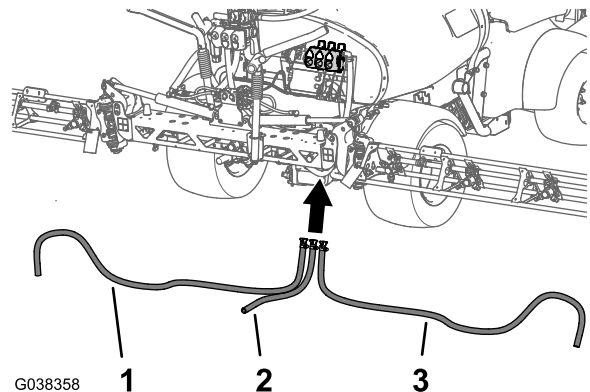


Figure 79

- | | |
|---|--|
| 1. Left boom-supply hose—2 x 213 cm (3/4 x 83-7/8 inches) | 3. Right boom-supply hose—2 x 142 cm (3/4 x 55-7/8 inches) |
| 2. Center boom-supply hose—2 x 67 cm (3/4 x 26-5/16 inches) | |

- Assemble the straight barbed fitting of the supply hose for the left boom-supply hose onto the quick-connect fitting at the left-boom-section valve ([Figure 80](#)).

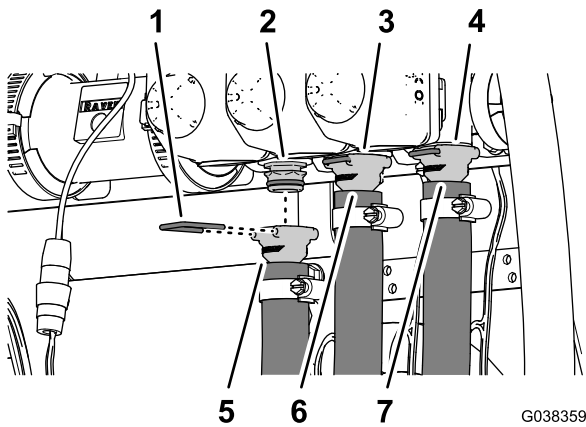


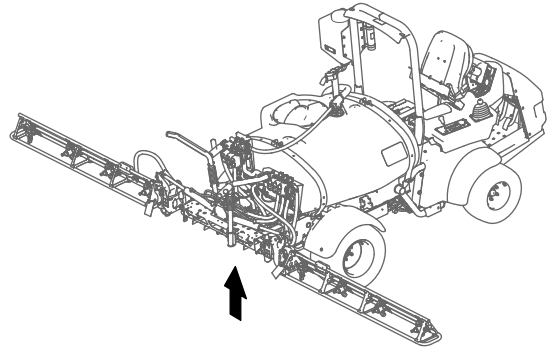
Figure 80

- | | |
|--|--|
| 1. Retainer | 5. Straight barbed fitting—supply hose for the left-boom section—2 x 205 cm (3/4 x 80-13/16 inches) |
| 2. Quick-connect fitting (left-boom-section valve) | 6. Straight barbed fitting—supply hose for the center-boom section—2 x 58 cm (3/4 x 22-13/16 inches) |
| 3. Quick-connect fitting (center-boom-section valve) | 7. Straight barbed fitting—supply hose for the right-boom section—2 x 170 cm (3/4 x 66-13/16 inches) |
| 4. Quick-connect fitting (right-boom-section valve) | |

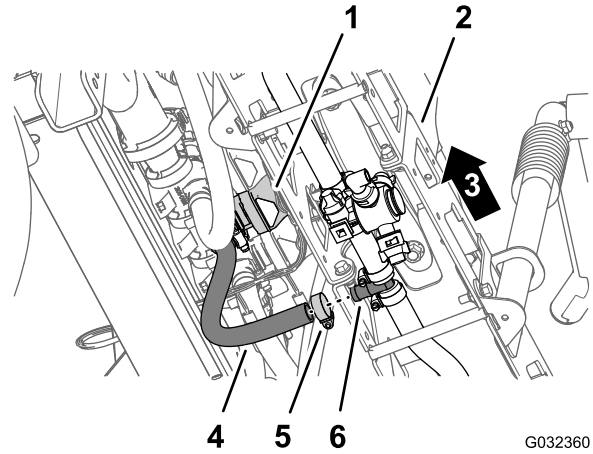
3. Secure the straight barbed fitting to the quick-connect fitting with the retainer that is supplied with the hose (Figure 80).

Installing the Supply Hoses to the Boom Sections

1. Assemble the center boom-supply hose onto the T-fitting at the center-boom section (Figure 81).



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Figure 81

- | | |
|------------------------------|--------------------------------------|
| 1. Center boom-section valve | 4. Supply hose (center-boom section) |
| 2. Center-boom section | 5. Hose clamp |
| 3. Left side of the machine | 6. Barbed T-fitting |

2. Secure the hose to the T-fitting with a hose clamp that you removed in step 5 of [Removing the Boom-Section Hoses](#) (page 11).
3. Route the right boom-supply hose through the support clamp at the end of the center-boom section (Figure 82).

17

Installing the Shutoff Valve and Hoses for the Optional Spray Gun Kit or Electric Hose-Reel Kit

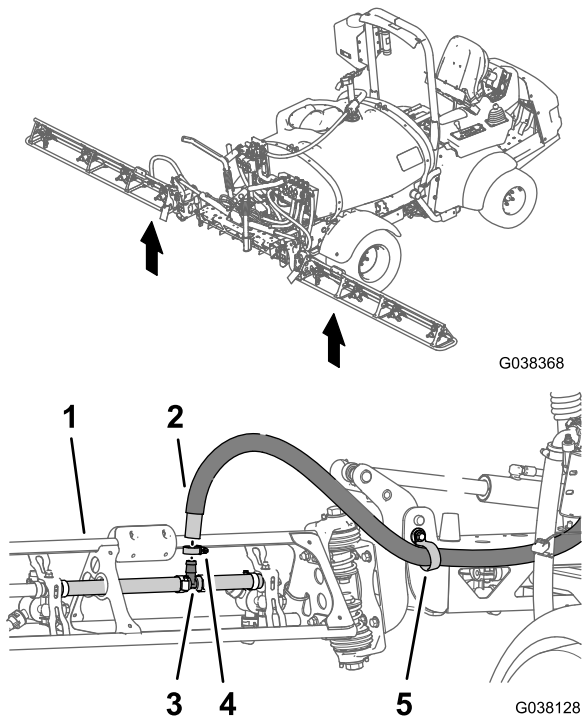


Figure 82

- | | |
|-------------------------------------|---------------|
| 1. Outer boom section | 4. Hose clamp |
| 2. Supply hose (outer-boom section) | 5. R-clamp |
| 3. Barbed T-fitting | |
4. Assemble the right boom-supply hose onto the T-fitting at the right-boom section (Figure 82).
 5. Secure the hose to the T-fitting with a hose clamp that you removed in step 1 of [Removing the Boom-Section Hoses](#) (page 11).
 6. Repeat steps 3 through 5 for the left boom-supply hose at the left-boom section.

Parts needed for this procedure:

1	Cap and retractor
1	Straight barbed fitting (1/2 inch)
1	Quick-connect fitting (socket)
2	Hose clamp 13 to 32 mm (1/2 to 1-1/4 inches)
1	Hose—1.3 x 762 cm (1/2 x 300 inches)
1	Hose—1.3 x 180 cm (1/2 x 83 inches)
2	2412-36 Hose clamp 6 to 11 mm (1/4 to 7/16 inch)
1	Bypass shutoff valve
1	Section bypass hose—2.5 x 146 cm (1 x 57-1/2 inches)

Repositioning the Section Bypass Valves

1. Remove the retainer that secures the plug to the socketed quick-connect fitting of the bypass manifold (Figure 83).

Note: Retain the retainer for installation in [Installing the Section Bypass Hose—Machines with the Optional Spray Gun Kit or the Optional Electric Hose Reel Kit](#) (page 46).

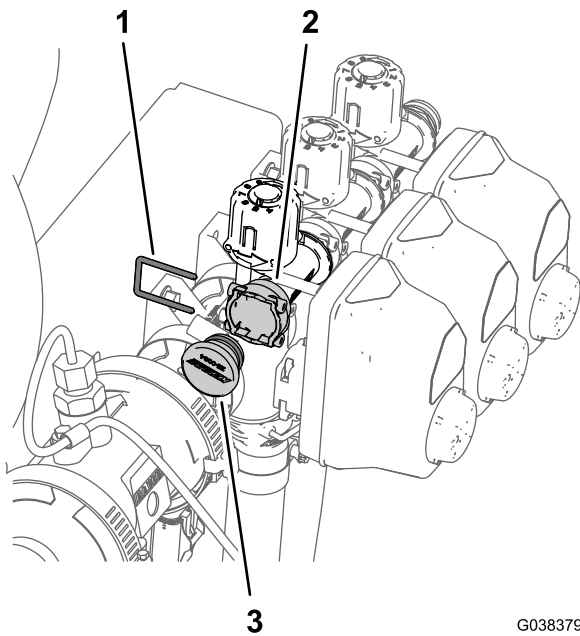


Figure 83

G038379

- | | |
|-------------------------|---------|
| 1. Retainer | 3. Plug |
| 2. Quick-connect socket | |

- Remove the plug from the socketed quick-connect fitting (Figure 83).

Note: You no longer need the plug.

- Remove the 3 retainers that secure the bypass manifold to the spray valve manifold (Figure 84).

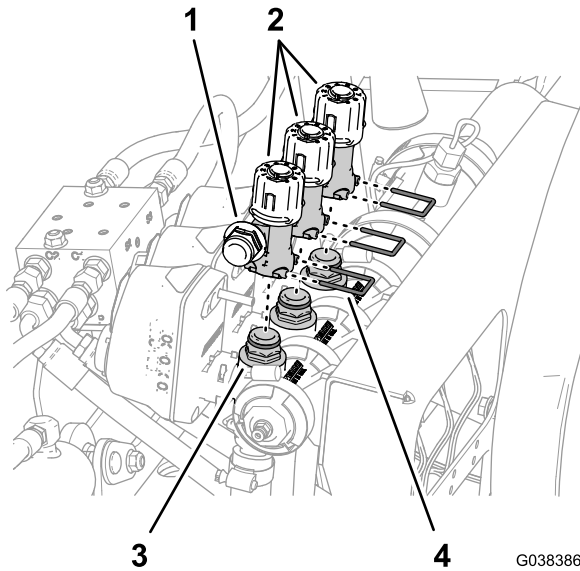


Figure 84

G038386

- | | |
|---|---|
| 1. Quick-connect fitting (bypass valve) | 3. Quick-connect fitting (spray valve manifold) |
| 2. Bypass valves | 4. Retainer |

- Lift the bypass manifold from the spray valve manifold (Figure 84).

- Rotate the bypass manifold 180° and seat it onto the 3 quick-connect fittings of the spray valve manifold (Figure 85).

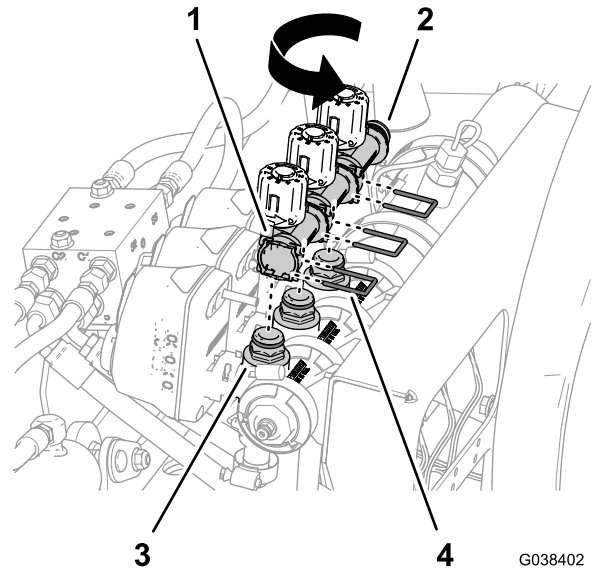


Figure 85

G038402

- | | |
|---|---|
| 1. Bypass manifold—quick-connect socket | 3. Quick-connect fitting (spray valve manifold) |
| 2. Quick-connect fitting (bypass valve) | 4. Retainer |

- Secure the bypass manifold to the quick-connect fittings of the spray valve manifold (Figure 85) with the 3 retainers that you removed in step 3.
- Assemble the cap onto the quick-connect fitting (Figure 86) with the retainer that you removed in step 1.

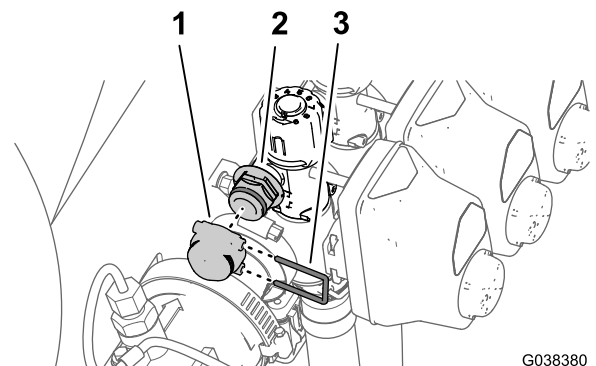


Figure 86

G038380

- | | |
|--------------------------|-------------|
| 1. Cap | 3. Retainer |
| 2. Quick-connect fitting | |

Installing the Shutoff Valve for the Optional Spray Gun Kit or the Electric Hose Reel Kit

1. Remove the flange clamp that secures the gasket and end cap to the flange of the right spray valve ([Figure 87](#)).

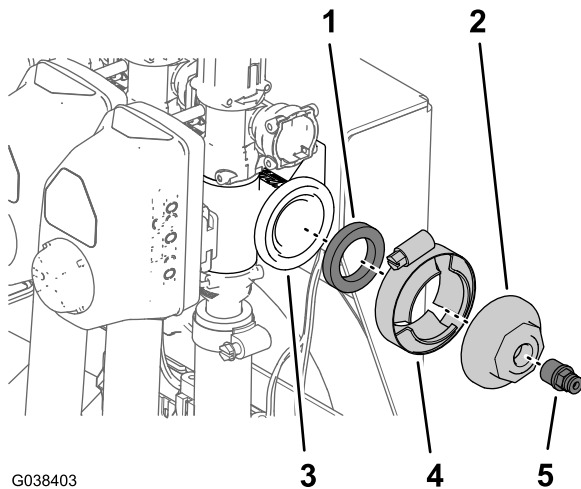


Figure 87

- | | |
|-------------------------------|-----------------|
| 1. Gasket | 4. Flange clamp |
| 2. End cap (ported) | 5. Tube coupler |
| 3. Flange (right spray valve) | |

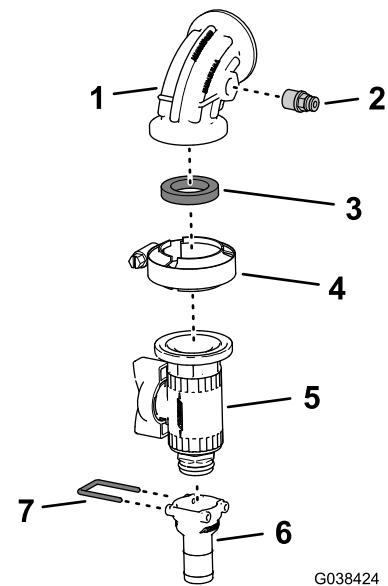


Figure 88

G038424

- | | |
|--|---------------------------------------|
| 1. 90° elbow (with pressure port) | 5. Flanged shutoff valve |
| 2. Tube coupler | 6. Straight barbed fitting (3/4 inch) |
| 3. Gasket—25 x 35 mm (1 x 1-3/8 inches) | 7. Retainer |
| 4. Flange clamp—40 to 64 mm (1-9/16 to 2-1/2 inches) | |

2. Remove the tube coupler from the port of the end cap ([Figure 87](#)).

Note: Retain the flange clamp, gasket, and tube coupler. You no longer need the end cap.

3. Remove the retainer that secures the straight barbed fitting (3/4 inch) to the flange shutoff valve, and remove the barbed fitting ([Figure 88](#)).

Note: Retain the retainer and straight barbed fitting for installation in [Installing the Supply Hose—Machines with the Optional Electric Hose-Reel Kit](#) (page 44).

4. Assemble the tube coupler that you removed in step 2 into the pressure port of the 90° elbow ([Figure 88](#)).

5. Assemble the flanged shutoff valve to the 90° elbow (with pressure port) and gasket—25 x 35 mm (1 x 1-3/8 inches) with the flange clamp—40 to 64 mm (1-9/16 to 2-1/2 inches) as shown in [Figure 88](#).

Note: Ensure that the handle of the shutoff valve and the tube coupler are aligned 180° apart.

6. Assemble the flange of the 90° elbow (with pressure port) to the flange of the right-boom section valve with the gasket and flange clamp that you removed in step 1 as shown in [Figure 89](#).

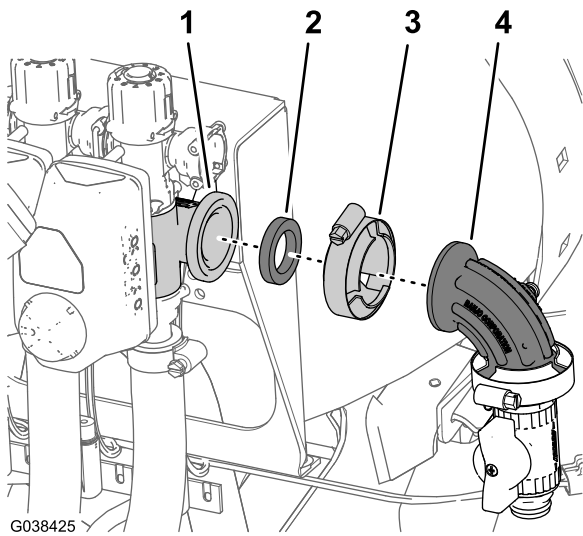
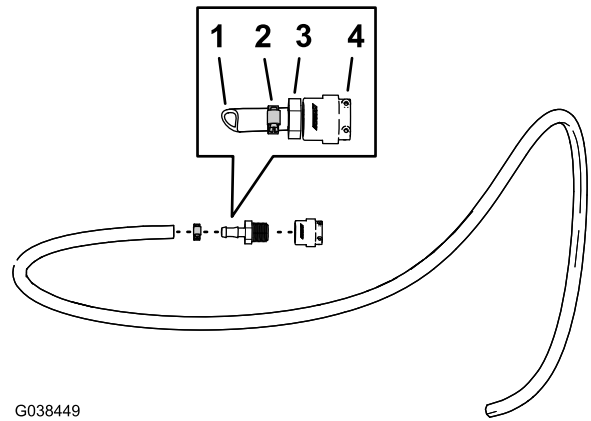


Figure 89

1. Flange (right-boom-section valve)
2. Gasket
3. Flange clamp
4. 90° elbow (with pressure port)



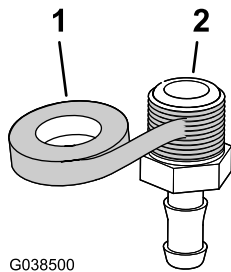
G038449

Figure 91

1. Hose—1.3 x 762 cm (1/2 x 300 inches)
 2. Hose clamp
 3. Straight barbed fitting (1/2 inch)
 4. Quick-connect fitting (socket)
-
3. Assemble the hose—1.3 x 762 cm (1/2 x 300 inches) with a hose clamp 6 to 11 mm (1/4 to 7/16 inch) onto the straight barbed fitting (Figure 91).
 4. Assemble the quick-connect fitting (socket) of the hose to the quick-connect fitting of the flange shutoff valve (Figure 92).

Installing the Supply Hose—Machines with the Optional Spray Gun Kit

1. Apply PTFE tape to the threads (Figure 91) of the straight barbed fitting (1/2 inch).

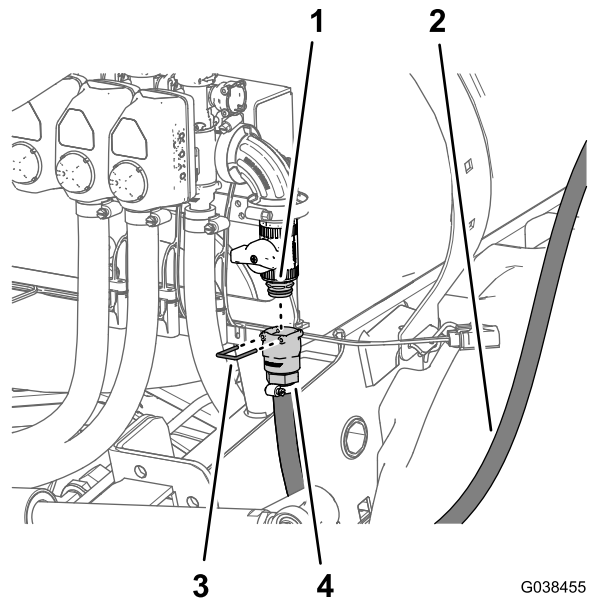


G038500

Figure 90

1. PTFE tape
2. Straight barbed fitting (1/2 inch)

2. Assemble the straight barbed fitting (1/2 inch) into the quick-connect fitting (socket) as shown in Figure 91.



G038455

Figure 92

1. Quick-connect fitting (flange shutoff valve)
2. Hose—1.3 x 762 cm (1/2 x 300 inches)
3. Retainer
4. Quick-connect fitting (socket)

5. Secure the quick-connect fittings of the hoses and the flange shutoff valve with the retainer provided with the quick-connect fitting of the hose (Figure 92).
6. Route the supply hose forward along the sprayer tank toward the spray-gun bracket, and secure the hose to the tank frame with the 3 cable ties (Figure 93).

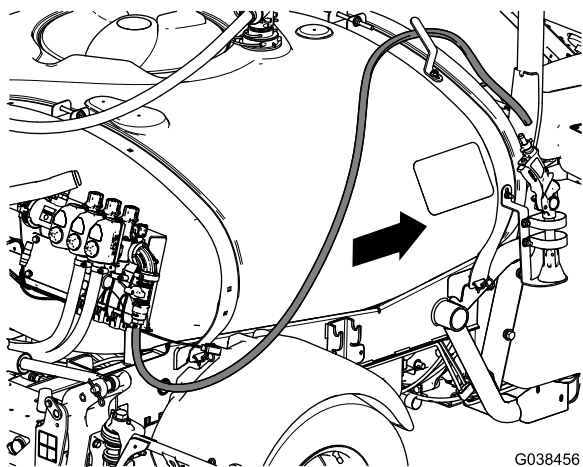


Figure 93

G038456

Installing the Supply Hose—Machines with the Optional Electric Hose-Reel Kit

1. Assemble the straight barbed fitting (3/4 inch) that you removed in step 3 of [Installing the Shutoff Valve for the Optional Spray Gun Kit or the Electric Hose Reel Kit \(page 42\)](#) to the hose—1.3 x 180 cm (1/2 x 71 inches) with a hose clamp 13 to 32 mm (1/2 to 1-1/4 inches) as shown in [Figure 95](#).

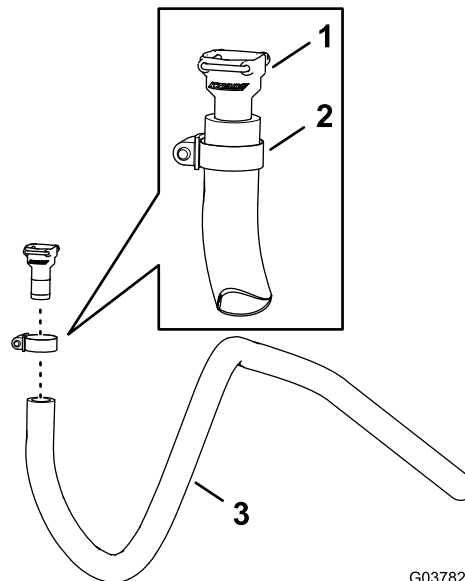


Figure 95

G037825

1. Straight barbed fitting (3/4 inch)
2. Hose clamp
3. Hose—1.3 x 180 cm (1/2 x 83 inches)

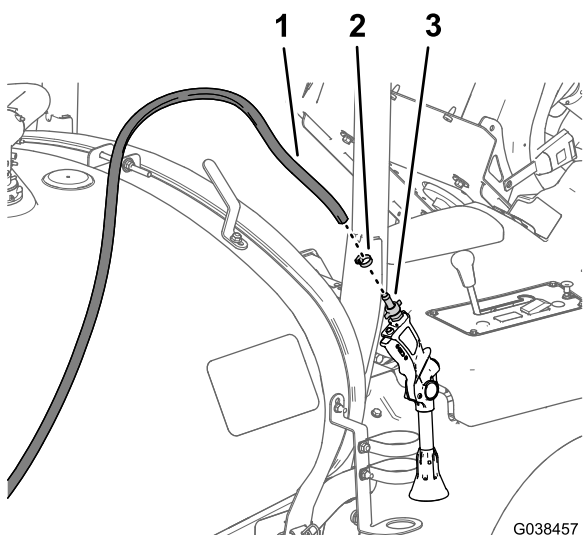


Figure 94

G038457

1. Supply hose
2. Hose clamp
3. Hose barb (spray gun)

8. Place the spray gun in the spray-gun bracket, and hose onto the hose hook.

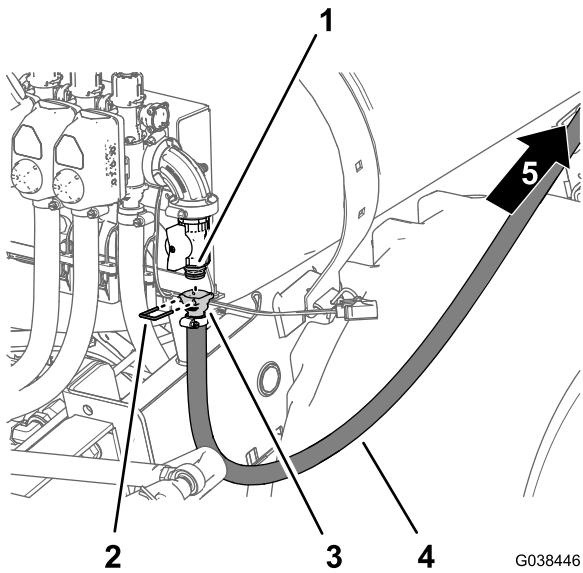


Figure 96

- | | |
|---|--|
| 1. Quick-connect fitting (flange shutoff valve) | 4. Hose—1.3 x 180 cm (1/2 x 83 inches) |
| 2. Retainer | 5. Front of the machine |
| 3. Straight barbed fitting | |

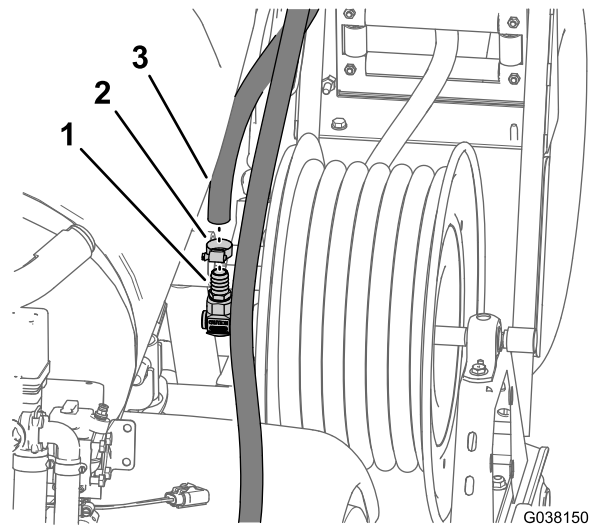


Figure 98

- | | |
|----------------------------------|----------------------------|
| 1. Barbed fitting (inlet swivel) | 3. Supply hose (hose reel) |
| 2. Hose clamp | |

3. Secure the straight barbed fitting and the quick-connect fitting (Figure 96) with the retainer that you removed in step 3 of [Installing the Shutoff Valve for the Optional Spray Gun Kit or the Electric Hose Reel Kit](#) (page 42).
4. Route the supply hose forward along the sprayer tank toward the hose reel (Figure 96).
5. Assemble the inlet hose through the support clamp at the forward strap of the sprayer tank (Figure 97).

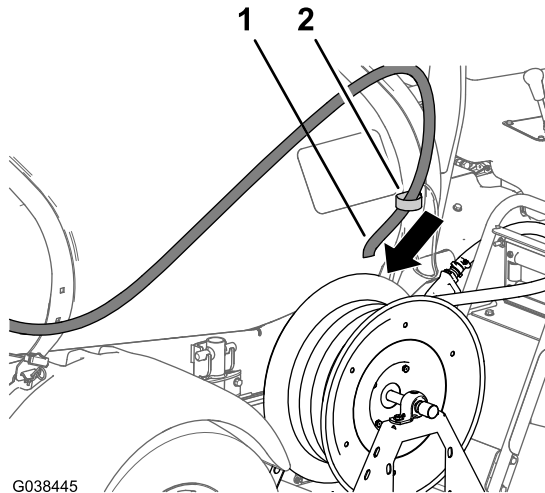


Figure 97

- | | |
|--|------------------|
| 1. Hose—1.3 x 180 cm (1/2 x 83 inches) | 2. Support clamp |
|--|------------------|

6. Assemble the supply hose onto the barbed fitting at the inlet of the hose reel (Figure 98), and secure the hose with a hose clamp 13 to 32 mm (1/2 to 1-1/4 inches).

Installing the Section Bypass Hose—Machines with the Optional Spray Gun Kit or the Optional Electric Hose Reel Kit

1. Assemble the bypass shutoff valve to the quick-connect socket of the bypass manifold (Figure 99) with the small retainer that you removed in step 1 of [Repositioning the Section Bypass Valves](#) (page 40).

Note: Ensure that the handle of the bypass shutoff valve is aligned as shown in Figure 99.

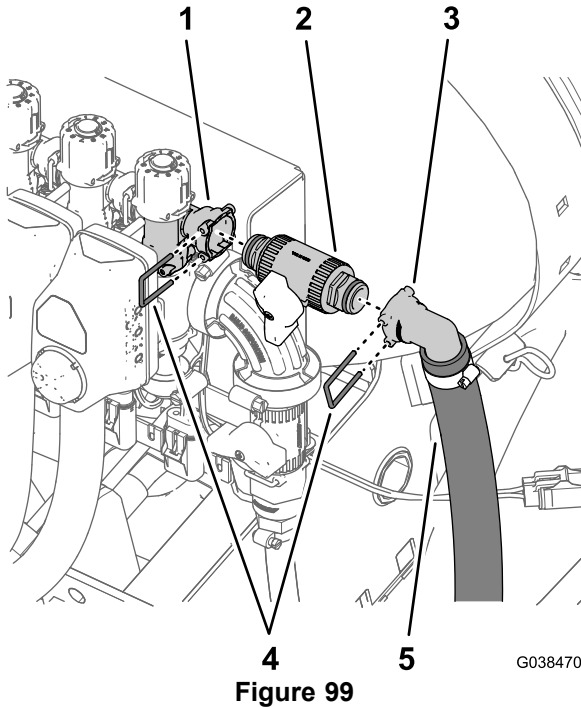


Figure 99

- | | |
|---|---|
| 1. Bypass manifold—quick-connect socket | 4. Retainer (small) |
| 2. Bypass shutoff valve | 5. Section bypass hose—2.5 x 146 cm (1 x 57-1/2 inches) |
| 3. 90° quick-connect fitting | |

2. Assemble the 90° quick-connect fitting of the section bypass hose—2.5 x 146 cm (1 x 57-1/2 inches) onto the quick coupling of the bypass shutoff valve with the retainer (small) that is supplied with the section bypass hose (Figure 99).
3. Route the section bypass hose around the right frame channel toward the bulkhead fitting in the sprayer tank as shown in Figure 100.

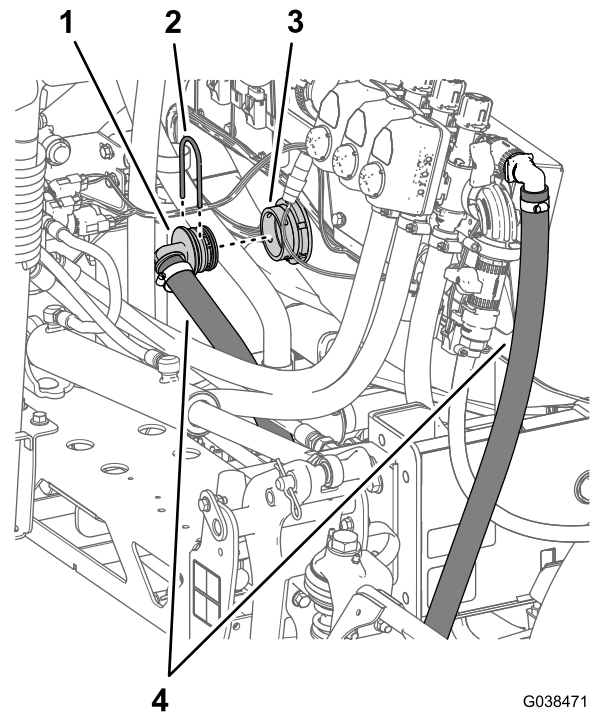


Figure 100

- | | |
|-----------------------|------------------------------------|
| 1. Retainer (large) | 3. Bulkhead fitting (sprayer tank) |
| 2. 90° barbed fitting | 4. Section bypass hose |

4. Assemble the 90° barbed fitting of the section bypass hose into the bulkhead fitting (Figure 100).
5. Secure the 90° fitting to the bulkhead fitting (Figure 100) with the retainer (large) that you removed in step 1 of [Removing the Section Bypass Hose](#) (page 16).

18

Installing the Supply Hose for the Optional Eductor Kit

Parts needed for this procedure:

1	Eductor supply hose 2 x 88 cm (3/4 x 34-11/16 inches)
1	Retainer (small)

Procedure

1. Align the straight barbed fitting of the eductor supply hose 2 x 88 cm (3/4 x 34-11/16 inches) with the gasket that you removed in step 2 of [Disconnecting the Optional Eductor Kit \(page 9\)](#) with the flange of the eductor ([Figure 101](#)).

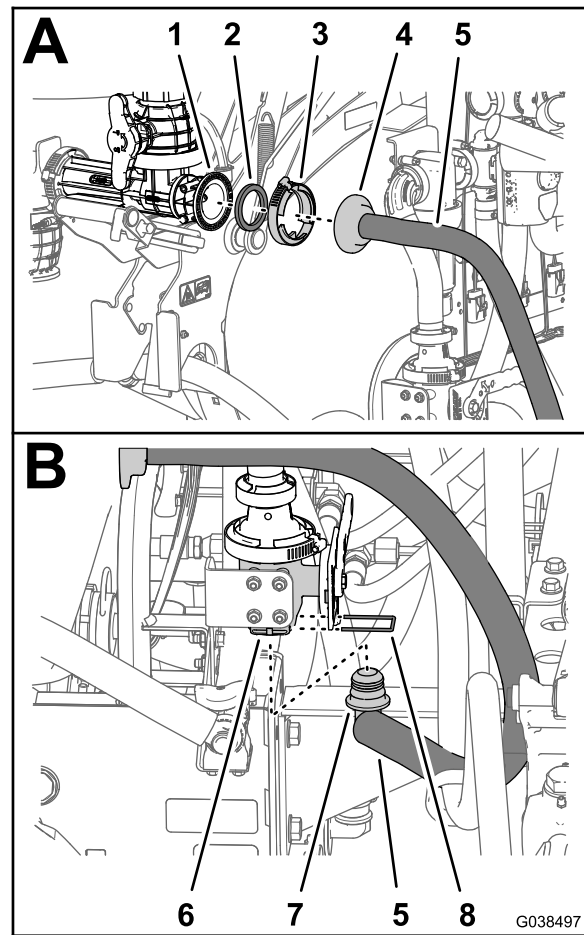
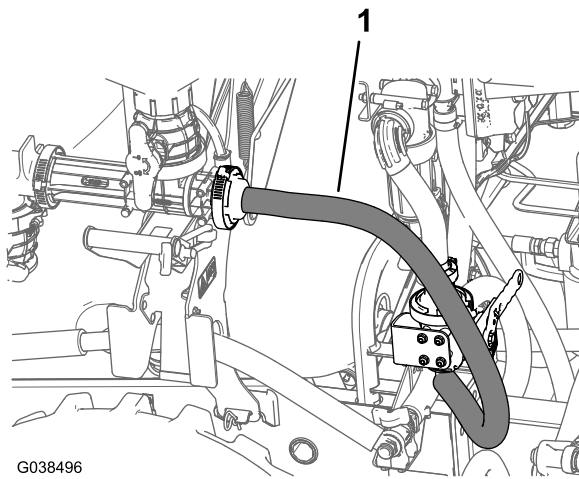


Figure 101

- | | |
|----------------------------|--|
| 1. Flange (eductor) | 5. Eductor supply hose 2 x 88 cm (3/4 x 34-11/16 inches) |
| 2. Gasket | 6. Bottom port (eductor-shutoff valve) |
| 3. Flange clamp | 7. 90° barbed fitting |
| 4. Straight barbed fitting | 8. Retainer (small) |

2. Loosely assemble the barbed fitting to the eductor flange with the flange clamp that you removed in step 1 of [Disconnecting the Optional Eductor Kit \(page 9\)](#)
3. Route the eductor supply hose to the bottom of the eductor-shutoff valve as shown in [Figure 102](#).



G038496

Figure 102

1. Eductor supply hose 2 x 88 cm (3/4 x 34-11/16 inches)
-
4. Assemble the 90° barbed fitting of the eductor supply hose into the bottom port of the eductor-shutoff valve (Figure 101).
 5. Secure the 90° barbed fitting to the port of the eductor shutoff valve with a small retainer (Figure 101).
 6. Tighten the flange clamp that secures the barbed fitting of the eductor supply hose to the flange of the eductor (Figure 102).

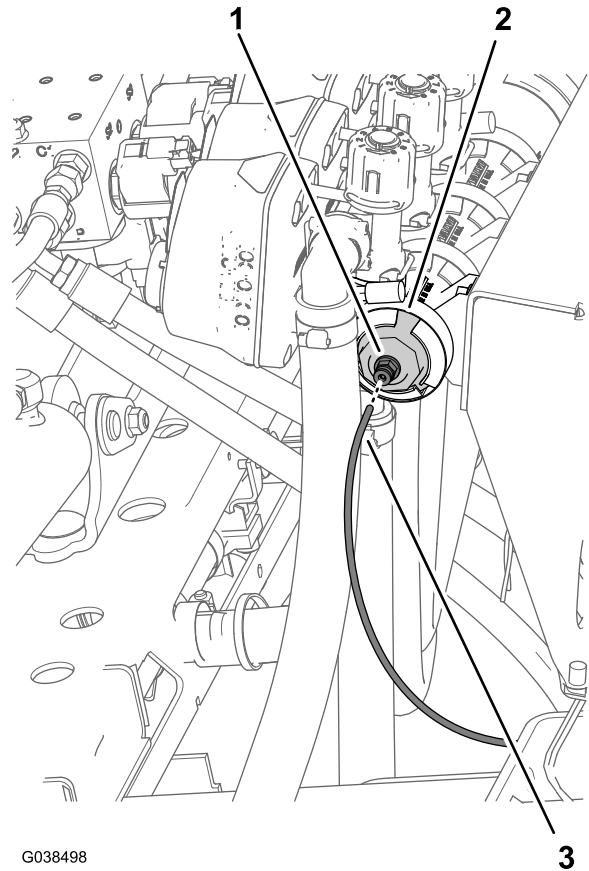
19

Connecting the Pressure Sense Tube

No Parts Required

Procedure

Insert the pressure sense tube into the tube connector at the end section valve (Figure 103 or Figure 104).



G038498

Figure 103

Machines without the spray wand kit or electric hose-reel kit

- | | |
|---------------------|------------------------|
| 1. Tube connector | 3. Pressure sense tube |
| 2. End cap (ported) | |

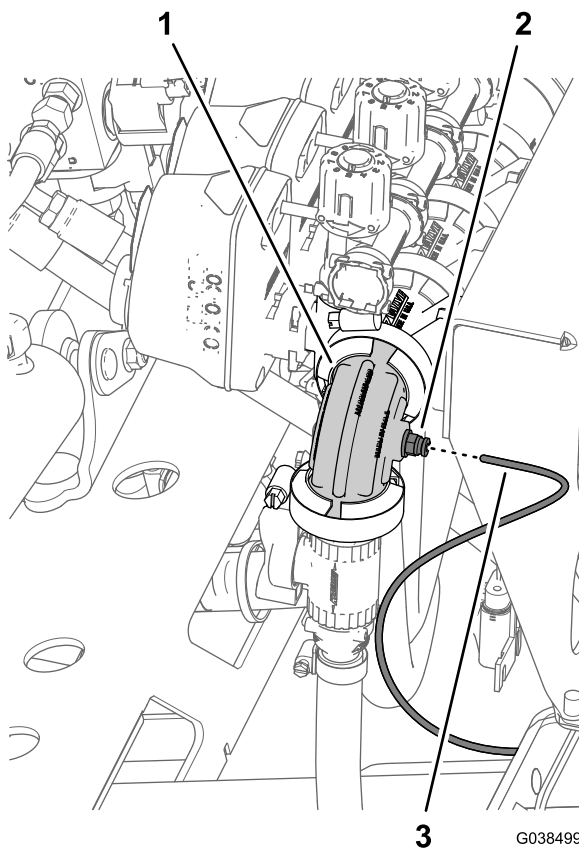


Figure 104

Machines with the spray wand kit or electric hose-reel kit

1. 90° elbow (with pressure port)
2. Tube connector
3. Pressure sense tube

Product Overview

Controls

Regulating (Rate-Control) Valve

This valve, located behind the tank (Figure 105), controls the amount of fluid that is routed to the booms or the rate return to the tank.

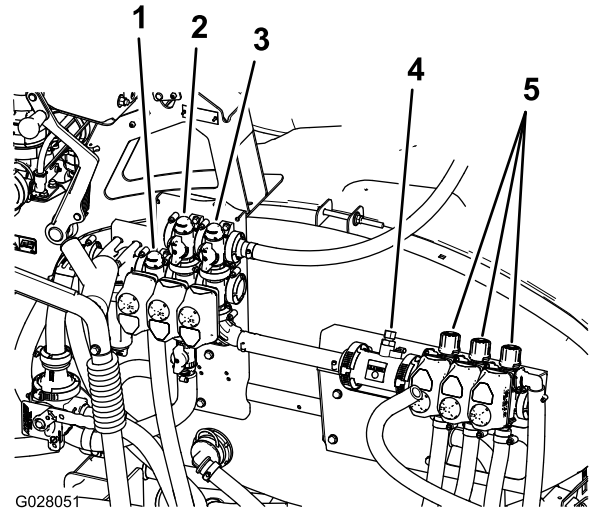


Figure 105

1. Regulating (rate-control) valve
2. Agitation valve
3. Master-boom valve
4. Flowmeter
5. Boom-section valves

20

Completing the Installation of the Arag to KZ Valve Conversion Kit

No Parts Required

Procedure

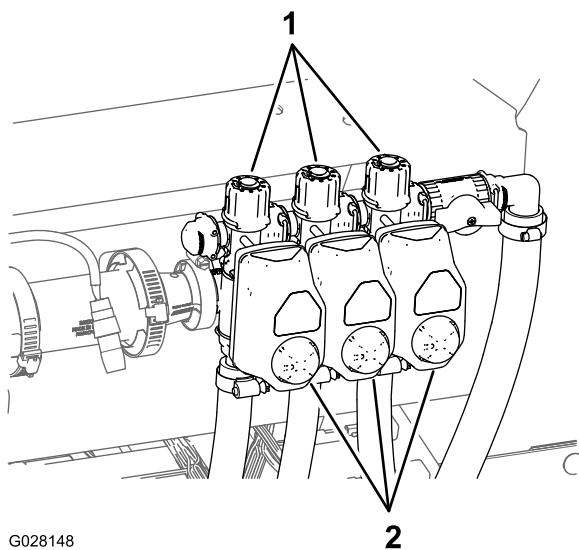
1. Connect the positive (red) cable to the positive (+) battery post and the negative (black) cable to the negative (-) battery post using the bolts and nuts; refer to Figure 4 in [Disconnecting the Battery](#) (page 6).
2. Slide the insulator boot over both battery posts; refer to Figure 4 in [Disconnecting the Battery](#) (page 6).
3. Move the prop rod for the seat into the slot and tilt the seat down until it latches securely.

Master-Boom Valve

The master-boom valve (Figure 105) is used to stop the flow to the flowmeter and boom valves.

Boom-Section Valves

The section valves control flow to the 3 boom sections and they can be turned on or off (Figure 106).



G028148

Figure 106

1. Knob (section-bypass valve) 2. Actuators (section valve)

Boom-Section-Bypass Valve

The boom bypass redirects the fluid flow for a boom section to the tank when you turn off the boom section. You can adjust the boom bypass to ensure that the boom pressure remains constant no matter how many booms sections are on. Refer to [Adjusting the Master-Boom-Bypass Valve \(page 52\)](#).

Agitation Valve

This valve is located on the rear of the tank ([Figure 105](#)). When agitation is on, the flow is directed through the agitation nozzles in the tank. When agitation is off, the flow is directed through the pump suction.

Agitation Throttle Valve

The agitation throttle valve is used to reduce the flow available for the agitation circuit. It provides additional flow for the boom sections.

Operation

Calibrating the Boom-Section-Bypass Valves

Note: Before using the sprayer for the first time, if you change the nozzles, or as needed, calibrate the sprayer flow, speed, and boom bypass.

Select an open flat area to perform this procedure.

1. Fill the spray tank halfway with clean water.
2. Lower the sprayer booms.
3. Move the range selector to the NEUTRAL position and set the parking brake.
4. Set the 3 boom switches to the ON position, but leave the master-boom switch off.
5. Set the pump switch to the ON position, and turn on the agitation.
6. Press down on the accelerator pedal until you reach the maximum engine speed, and toggle the throttle lock switch to the ON position.
7. On the InfoCenter, navigate to the Calibration menu and select Test Speed.
8. Using the plus (+) and minus (-) symbols, enter a test speed of 5.6 km/h (3.5 mph), then select the Home icon.
9. Turn the supervisor (rate-lockout) switch to the UNLOCK position, and turn the master-boom switch to the ON position.
10. Using the application-rate switch, adjust the application rate according to the table below.

Note: Selecting the Home Screen icon at any time cancels calibrations.

Nozzle Color	SI (Metric)	English	Turf
Yellow	159 l/ha	17 gpa	0.39 gpk
Red	319 l/ha	34 gpa	0.78 gpk
Brown	394 l/ha	42 gpa	0.96 gpk
Gray	478 l/ha	51 gpa	1.17 gpk
White	637 l/ha	68 gpa	1.56 gpk
Blue	796 l/ha	85 gpa	1.95 gpk
Green	1,190 l/ha	127 gpa	2.91 gpk

11. Turn off the left boom and adjust the boom-bypass knob ([Figure 107](#)) until the pressure reading is at the previously adjusted level (typically 2.75 bar or 40 psi).

Note: The numbered indicators on the bypass knob and needle are for reference only.

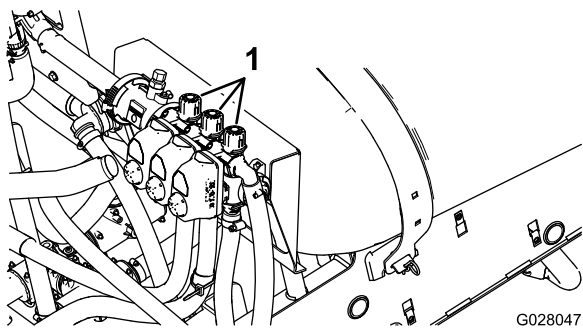


Figure 107

1. Boom-section-bypass adjustment knobs

12. Turn on the left boom and turn off the right boom.
13. Adjust the right boom-bypass knob (Figure 107) until the pressure reading is at the previously adjusted level (typically 2.75 bar or 40 psi).
14. Turn on the right boom and turn off the center boom.
15. Adjust the center boom-bypass knob (Figure 107) until the pressure reading is at the previously adjusted level (typically 2.75 bar or 40 psi).
16. Turn all the booms off.
17. Turn the pump off.

Note: Calibration is now complete.

Positioning the Agitation-Bypass-Valve Knob

- The agitation bypass valve is in the full OPEN position as shown in Figure 108.
- The agitation bypass valve is in the CLOSE (0) position as shown in Figure 108.
- The agitation bypass valve is in an INTERMEDIATE (adjusted relative to the pressure gauge for the sprayer system) position as shown in Figure 108.

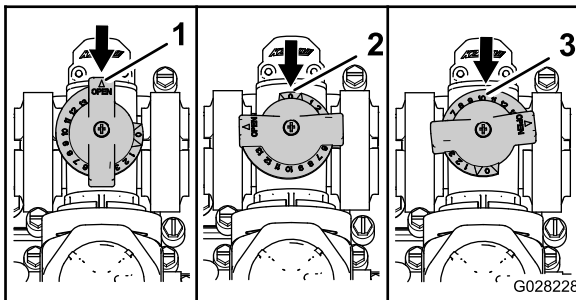


Figure 108

1. Open
2. Closed (0)
3. Intermediate position

Calibrating the Agitation-Bypass Valve

Service Interval: Yearly

Select an open flat area to perform this procedure.

1. Fill the spray tank with clean water.
2. Verify the agitation-control valve is open. If it has been adjusted, open it completely at this time.
3. Set the parking brake and start the engine.
4. Set the range selector to NEUTRAL.
5. Set the pump switch to the ON position.
6. Press the accelerator pedal to achieve maximum engine speed and set the throttle lock.
7. Set the 3 boom-section valves to the OFF position.
8. Set the master-boom switch to the ON position.
9. Set the system pressure to MAXIMUM.
10. Press the agitation switch to the OFF position and read the pressure gauge.
 - If the reading remains at 6.9 bar (100 psi) the agitation-bypass valve is properly calibrated.
 - If the pressure gauge reads differently continue to the next step.
11. Adjust the agitation-bypass valve (Figure 109) on the backside of the agitation valve until the pressure reading on the gauge is 6.9 bar (100 psi).

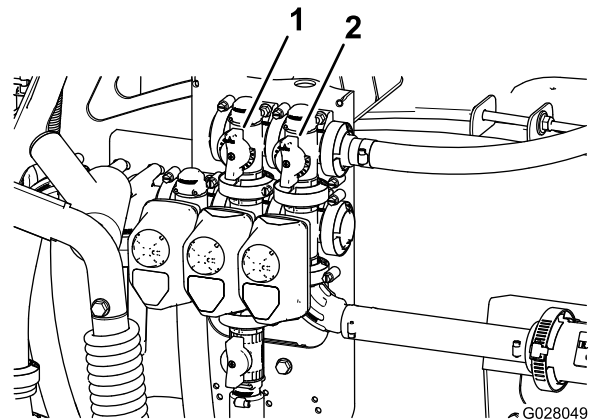


Figure 109

1. Agitation-bypass valve
2. Master-boom bypass

12. Press the pump switch to the OFF position, shift the throttle lever to the IDLE position, and turn the ignition switch to the OFF position.

Adjusting the Master-Boom-Bypass Valve

Note: Adjusting the master-boom-bypass valve reduces or increases the amount of flow sent to the agitation nozzles in the tank when the master-boom switch is set to the OFF position.

1. Fill the sprayer tank 1/2 full with clean water.
2. Move the machine to an open level surface.
3. Set the parking brake.
4. Set the range selector to the NEUTRAL position.
5. Set the pump switch to the ON position.
6. Set the agitation switch to the ON position.
7. Set the master-boom switch to the OFF position.
8. Increase the engine speed to full throttle and set the throttle lock to the ON position.
9. Adjust the master-boom-bypass handle to control the amount of agitation occurring in the tank (Figure 109).
10. Reduce the throttle speed to idle.
11. Set the agitation switch and pump switch to the OFF position.
12. Shut off the machine.

Maintenance

Changing the Pressure Filter Screen

Service Interval: Every 400 hours—Change the pressure filter screen.

Note: Optional pressure filter screens are available through your authorized Toro parts distributor.

1. Move the machine to a level surface, shut off the sprayer pump, shut off the engine, and remove the key from the starter switch.
2. Align a drain pan under the pressure filter (Figure 110).

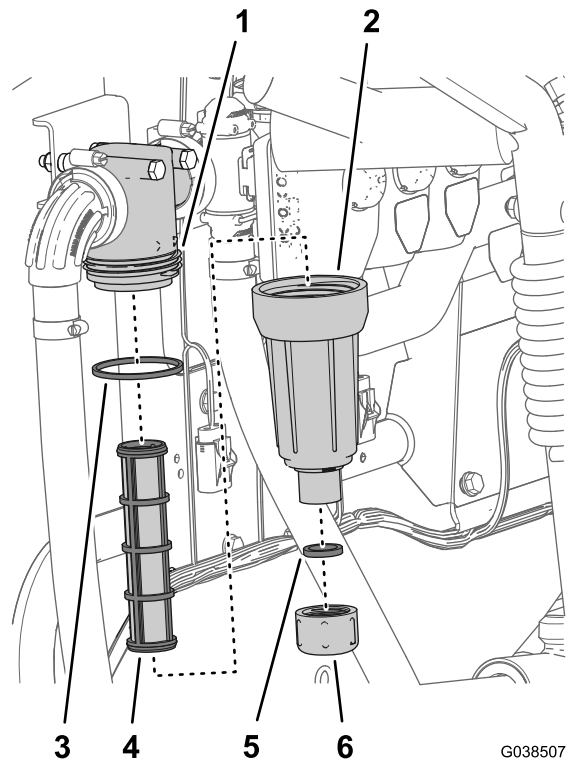


Figure 110

G038507

- | | |
|------------------|-----------------------|
| 1. Filter head | 4. Filter element |
| 2. Bowl | 5. O-ring (drain cap) |
| 3. O-ring (bowl) | 6. Drain cap |

3. Rotate the drain cap counterclockwise and remove it from the bowl of the pressure filter (Figure 110).

Note: Allow the bowl to drain completely.

4. Rotate the bowl counterclockwise and remove it from its filter head (Figure 110).
5. Remove the old pressure-filter element (Figure 110).

Note: Discard the old filter.

6. Check the O-ring for the drain cap (located at the threaded fitting of the bowl) and the O-ring for the bowl for damage and wear (Figure 110).

Note: Replace any damaged or worn O-rings for the plug, bowl, or both.

7. Install the new pressure-filter element into the filter head (Figure 110).

Note: Ensure that the filter element is firmly seated into the filter head.

8. Install the bowl onto the filter head and tighten by hand (Figure 110).
9. Install the cap onto the bowl and tighten by hand (Figure 110).

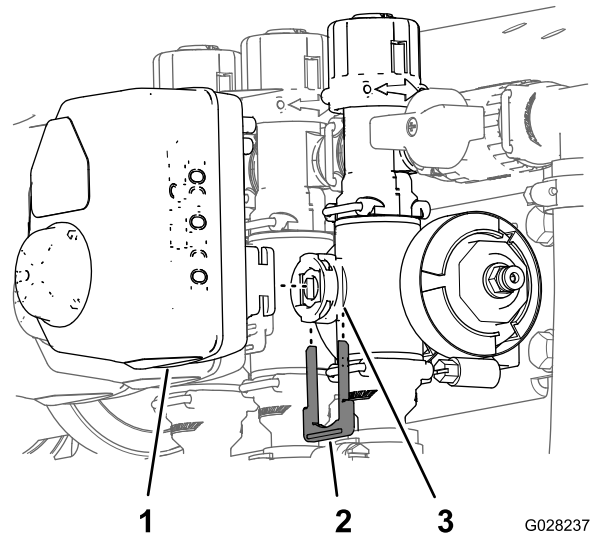


Figure 111

Section-Valve Actuator Shown (the agitation-valve actuator is similar)

1. Valve actuator (section valve shown)
2. Retainer
3. Stem port

4. Remove the actuator from the manifold valve.

Cleaning the Agitation and Section Valves

- To clean the agitation valve, refer to the following sections:
 1. [Removing the Valve Actuator \(page 53\)](#)
 2. [Removing the Agitation-Manifold Valve \(page 54\)](#)
 3. [Cleaning the Manifold Valve \(page 55\)](#)
 4. [Assembling the Manifold Valve \(page 57\)](#)
 5. [Installing the Agitation-Manifold Valve \(page 57\)](#)
 6. [Installing the Valve Actuator \(page 58\)](#)
- To clean the 3 section valves, refer to the following sections:
 1. [Removing the Valve Actuator \(page 53\)](#)
 2. [Removing the Section Valve Manifold \(page 54\)](#)
 3. [Cleaning the Manifold Valve \(page 55\)](#)
 4. [Assembling the Manifold Valve \(page 57\)](#)
 5. [Installing the Section-Manifold Valve \(page 58\)](#)
 6. [Installing the Valve Actuator \(page 58\)](#)

Removing the Valve Actuator

1. Position the sprayer on a level surface, set the parking brake, stop the pump, shut off the engine, and remove the key.
2. Remove the 3-pin connector of the valve actuator from the 3 socket electrical connector of the sprayer harness.
3. Remove the retainer that secures the actuator to the manifold valve for the rate control, agitation, master boom, or boom-section valve (Figure 111).

Note: Squeeze the 2 legs of the retainer together while pushing it down.

Note: Retain the actuator and retainer for installation in [Installing the Valve Actuator \(page 58\)](#).

Removing the Agitation-Manifold Valve

1. Remove the clamps and gaskets that secure the manifold for the agitation valve to the agitation bypass valve, pressure-filter head, reducer coupling, and adapter fitting (agitation throttle valve) as shown in [Figure 112](#).

Note: Retain the clamps, gaskets, quick connect, and quick-connect pin for installation in [Installing the Agitation-Manifold Valve](#) (page 57).

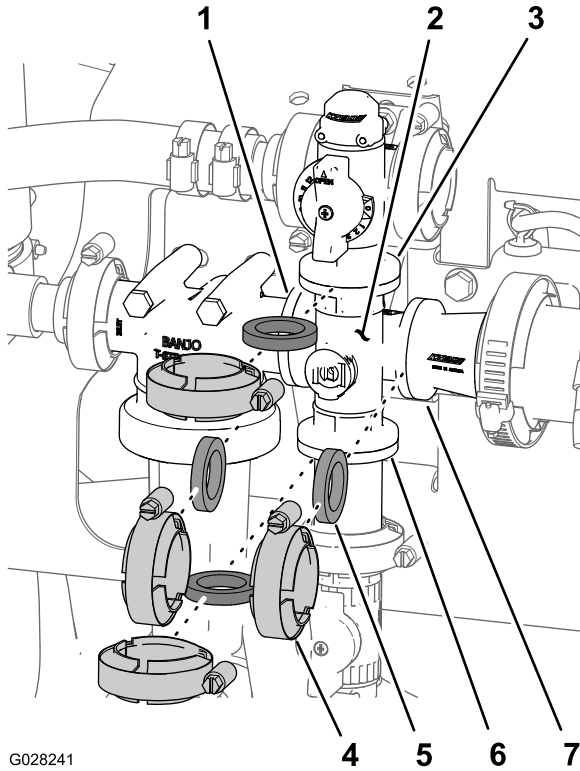


Figure 112
Agitation Valve

- | | |
|------------------------------------|--|
| 1. Flange (pressure-filter head) | 5. Gasket |
| 2. Manifold (agitation valve) | 6. Flange (adapter fitting—agitation throttle valve) |
| 3. Flange (agitation bypass valve) | 7. Flange (reducer coupling) |
| 4. Flange clamp | |

2. Remove the agitation-valve manifold from the machine ([Figure 113](#)).

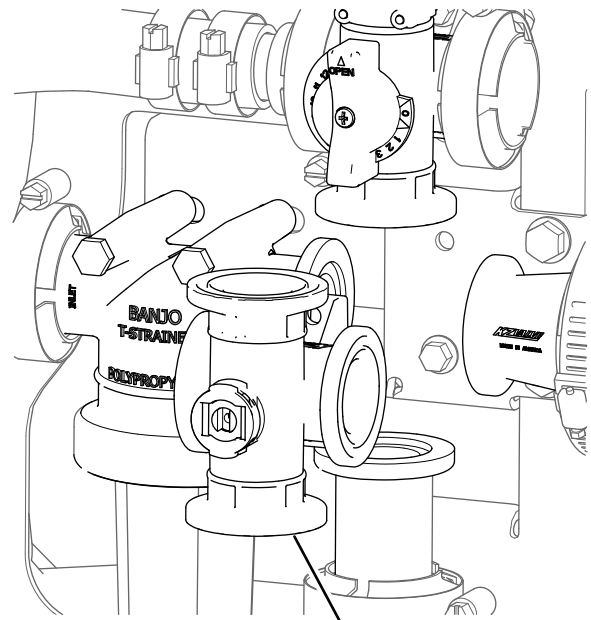


Figure 113

1. Agitation-valve manifold

Removing the Section Valve Manifold

1. Remove clamps and gaskets that secure the manifold for the section valve ([Figure 114](#)) to the adjacent section valve (if left, section valve and reducer coupling).

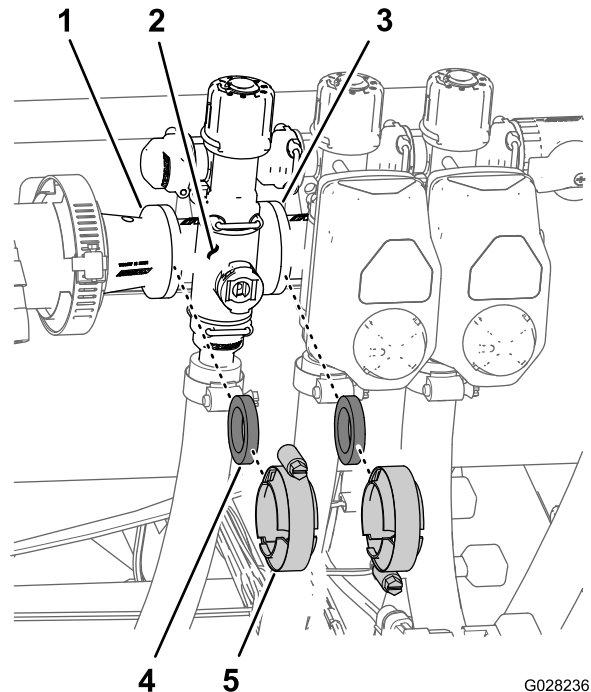


Figure 114

- | | |
|------------------------------------|-----------------|
| 1. Flange (reducer coupling) | 4. Gasket |
| 2. Manifold (section valve) | 5. Flange clamp |
| 3. Flange (adjacent section valve) | |

- Remove the retainer that secures the section valve manifold to the bypass fitting (Figure 115).

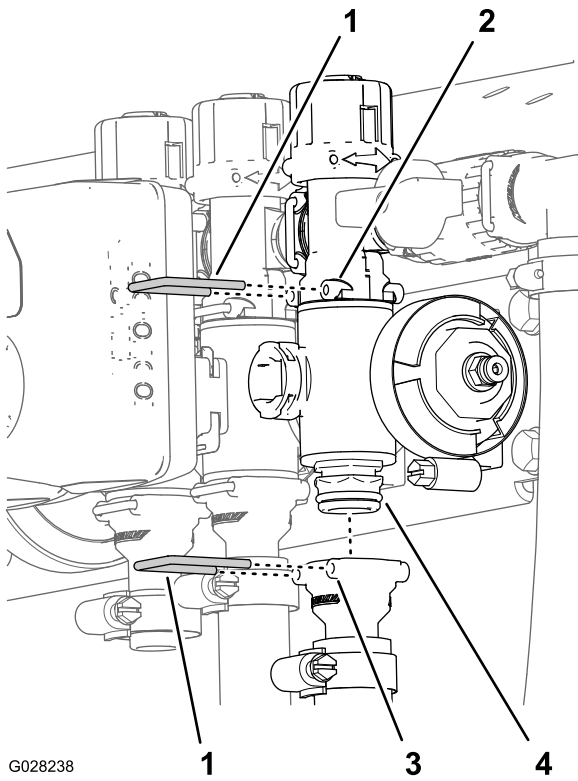


Figure 115

- Retainer
- Socket (bypass fitting)
- Manifold-valve assembly
- Socket (outlet fitting)

- Remove the section valve manifold from the machine (Figure 116).

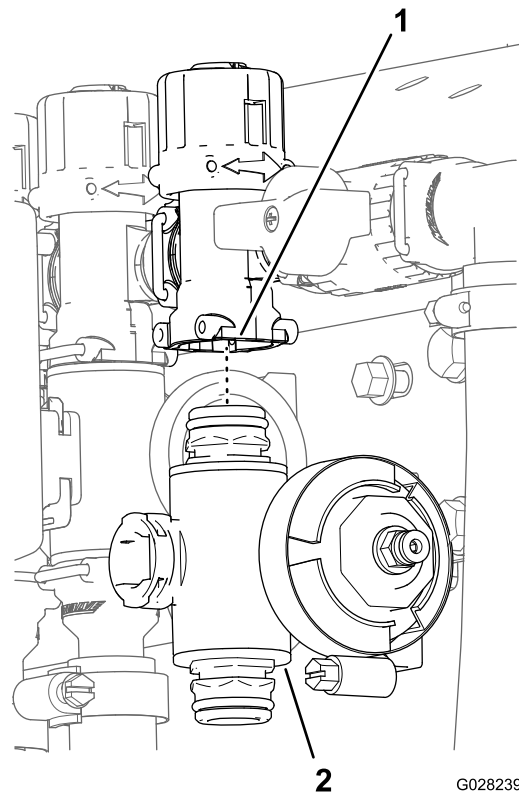


Figure 116

- Bypass fitting
- Section valve manifold

Cleaning the Manifold Valve

- Position the valve stem so that it is in the closed position (Figure 117).

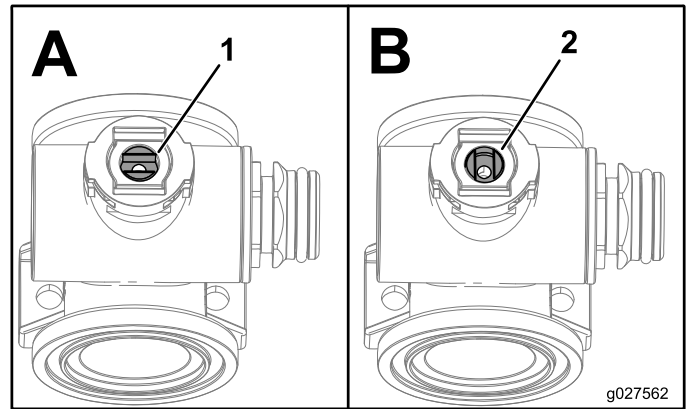
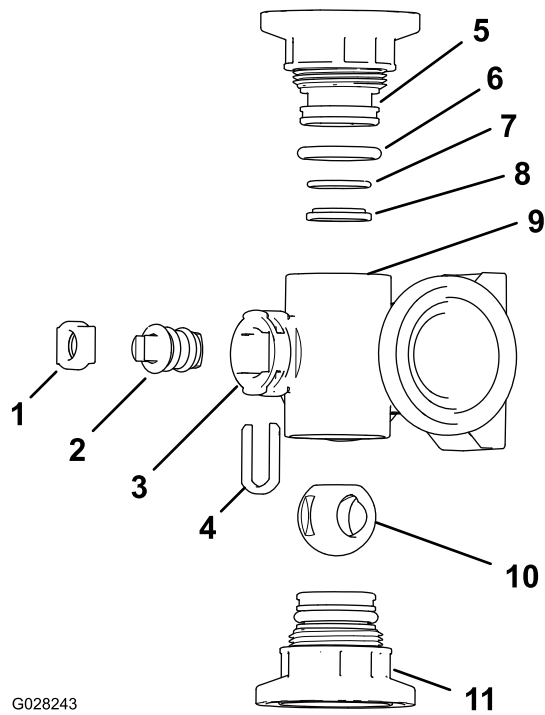


Figure 117

- Valve open
- Valve closed

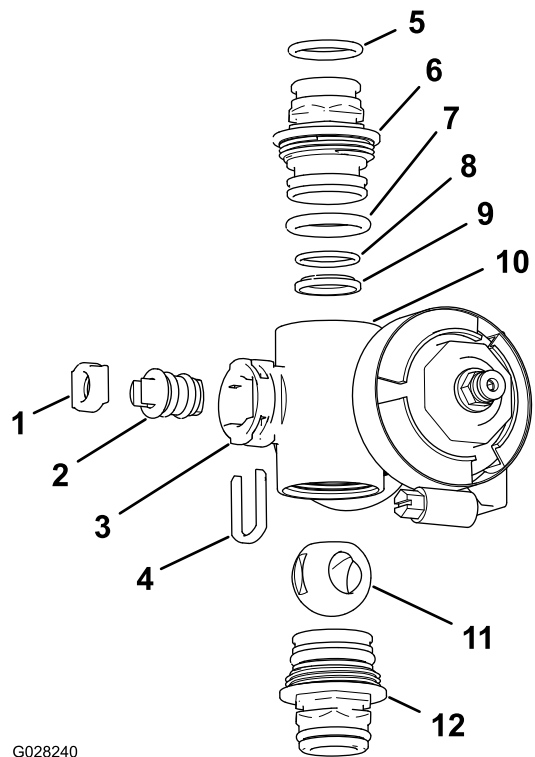
- Remove the 2 end-cap-fitting assemblies from each end of the manifold body (Figure 118 and Figure 119).



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Figure 118
Agitation Valve Manifold

- | | |
|--|---|
| 1. Stem retainer | 7. Back seating O-ring (0.676 inch / 0.07 inch) |
| 2. Valve stem | 8. Valve-seat ring |
| 3. Stem port | 9. Manifold body |
| 4. Stem retainer | 10. Ball valve |
| 5. End-cap fitting | 11. Quick connect |
| 6. End-cap-seal O-ring (0.796 inch / 0.139 inch) | |



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Figure 119
Section Valve Manifold

- | | |
|--|---|
| 1. Valve-stem seat | 7. End cap O-ring (0.796 inch / 0.139 inch) |
| 2. Valve-stem assembly | 8. Back seating O-ring (0.676 inch / 0.07 inch) |
| 3. Stem port | 9. Ball seat |
| 4. Stem retainer | 10. Manifold body |
| 5. Outlet fitting O-ring (0.737 inch / 0.103 inch) | 11. Ball valve |
| 6. End-cap fitting | 12. End-cap-fitting assembly |

- Turn the valve stem so that the ball is in the OPEN position (Figure 117).

Note: The valve stem should be parallel with the valve flow and the ball should slide out.

- Remove the stem retainer from the slots in the stem port in the manifold (Figure 118 and Figure 119).
- Remove the stem retainer and valve-stem seat from the manifold (Figure 118 and Figure 119).
- Reach into the manifold body and remove the valve-stem assembly (Figure 118 and Figure 119).
- Clean the inside of the manifold and exterior of the ball valve, valve-stem assembly, stem capture, and end fittings.

Assembling the Manifold Valve

1. Check the condition of the outlet fitting O-rings (section valve manifold only), end cap O-rings, back seating O-rings, and ball seat for damage or wear (Figure 118 and Figure 119).
Note: Replace any damaged or worn O-rings or seats.
2. Apply grease to the valve stem and insert it into the valve-stem seat (Figure 118 and Figure 119).
3. Install the valve stem and seat into the manifold and secure the stem and seat with the stem retainer (Figure 118 and Figure 119).
4. Ensure that the back seating O-ring and the ball seat are aligned and seated into the end-cap fitting (Figure 118 and Figure 119).
5. Install the end-cap-fitting assembly onto the manifold body until the flange of the end-cap fitting touches the manifold body (Figure 118 and Figure 119), then turn the end-cap fitting an additional 1/8 to 1/4 turn.

Note: Use caution to prevent damage to the end of the fitting.

6. Insert the ball into the valve body (Figure 120).

Note: The valve stem should fit inside the ball-drive slot. If the valve stem does not fit, adjust the position of the ball (Figure 120).

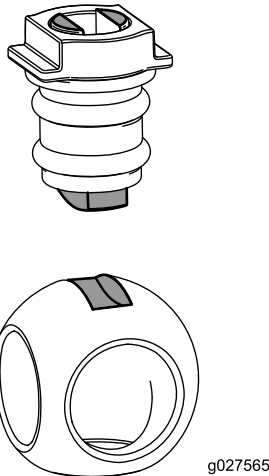


Figure 120

7. Turn the valve-stem assembly so that the valve is closed (Figure 117).
8. Repeat steps 4 and 5 for the other end-cap-fitting assembly.

Installing the Agitation-Manifold Valve

1. Align the flange of the agitation bypass valve, 1 gasket, and the end-cap-fitting flange of the agitation-valve manifold (Figure 121).

Note: If needed, loosen the mounting hardware for the pressure-filter head as needed to provide clearance.

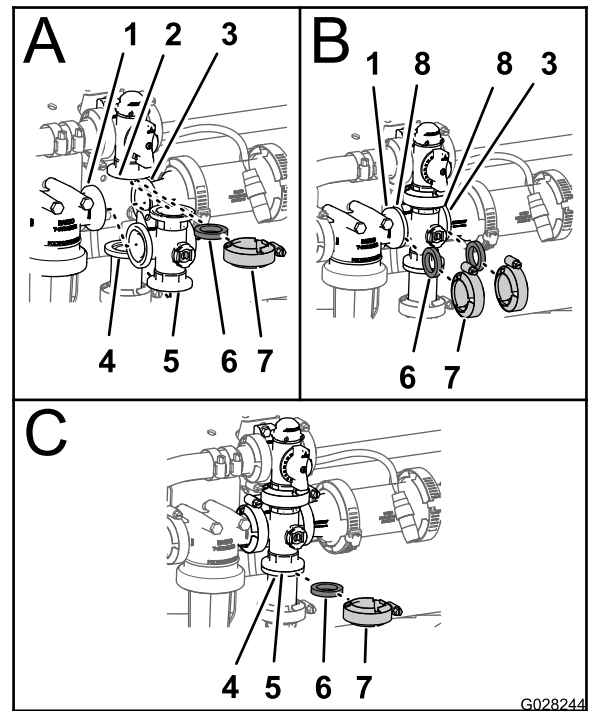


Figure 121

- | | |
|------------------------------------|--------------------------------------|
| 1. Flange (pressure-filter head) | 5. Gasket |
| 2. Flange (agitation bypass valve) | 6. Quick connect |
| 3. Flange (reducer coupling) | 7. Manifold (agitation valve) |
| 4. Flange clamp | 8. Flange (manifold—agitation valve) |

2. Assemble the agitation bypass valve, gasket, and agitation-valve manifold with a clamp, and tighten by hand (Figure 121).
3. Align a gasket between the flanges of the pressure-filter head and the agitation-valve manifold (Figure 121).
4. Assemble the pressure-filter head, gasket, and agitation-valve manifold with a clamp, and tighten by hand (Figure 121).
5. Align a gasket between the flanges of the agitation-valve manifold and the reducer coupling (Figure 121).
6. Assemble the agitation-valve manifold, gasket, and reducer coupling with a clamp, and tighten by hand (Figure 121).
7. Align a gasket between the flanges of the agitation-valve manifold and the adapter fitting for the agitation throttle valve (Figure 121).
8. Assemble the agitation-valve manifold, gasket, and adapter fitting with a clamp, and tighten by hand (Figure 121).
9. If you loosened the mounting hardware for the pressure-filter head, tighten the nut and bolt to 1978 to 2542 N·cm (175 to 225 in·lb).

Installing the Section-Manifold Valve

1. Insert the upper end-cap fitting of the manifold valve into the bypass fitting (Figure 122).

Note: If needed, loosen the mounting hardware for the bypass valve as needed to provide clearance.

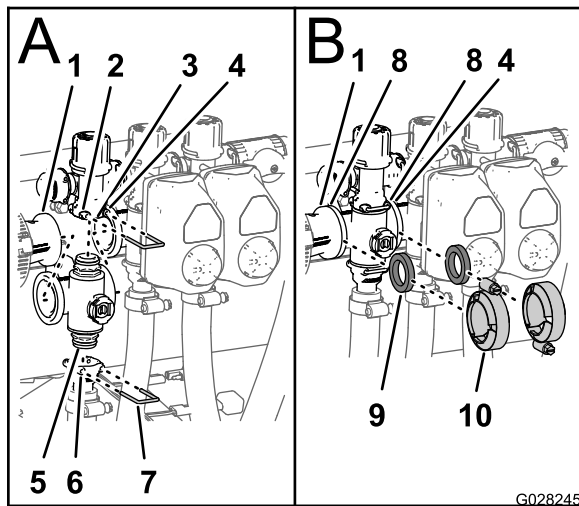


Figure 122

- | | |
|---|------------------------------------|
| 1. Flange (reducer coupling) | 6. Socket (outlet fitting) |
| 2. Socket (bypass fitting) | 7. Retainer |
| 3. Bypass valve | 8. Flange (manifold—section valve) |
| 4. Flange (adjacent manifold—agitation valve) | 9. Gasket |
| 5. End-cap fitting (manifold-valve assembly) | 10. Flange clamp |

2. Secure the end-cap fitting to the bypass fitting by inserting a retainer into the socket of the bypass fitting (Figure 122).
3. Assemble the outlet fitting onto the lower end-cap fitting of the manifold valve (Figure 122).
4. Secure the end-cap fitting to the outlet fitting by inserting a retainer into the socket of the outlet fitting (Figure 122).
5. Align a gasket between the flanges of the reducer coupling and the section valve manifold (Figure 122).
6. Assemble the reducer coupling, gasket, and section valve manifold with a clamp, and tighten by hand (Figure 122).
7. If installing the 2 left most section valves, align a gasket between the flanges of the 2 adjacent section valve manifolds (Figure 122).
8. Assemble the 2 adjacent section valve manifolds and gasket with a clamp, and tighten by hand (Figure 122).
9. If you loosened the mounting hardware for the bypass valve, tighten the nut and bolt to 1017 to 1243 N·cm (90 to 110 in-lb).

Installing the Valve Actuator

1. Align the actuator to the manifold valve.
2. Secure the actuator and valve with the retainer that you removed in step 3 of [Installing the Valve Actuator](#) (page 58).

Storage

Perform the following maintenance steps for short-term or long-term storage:

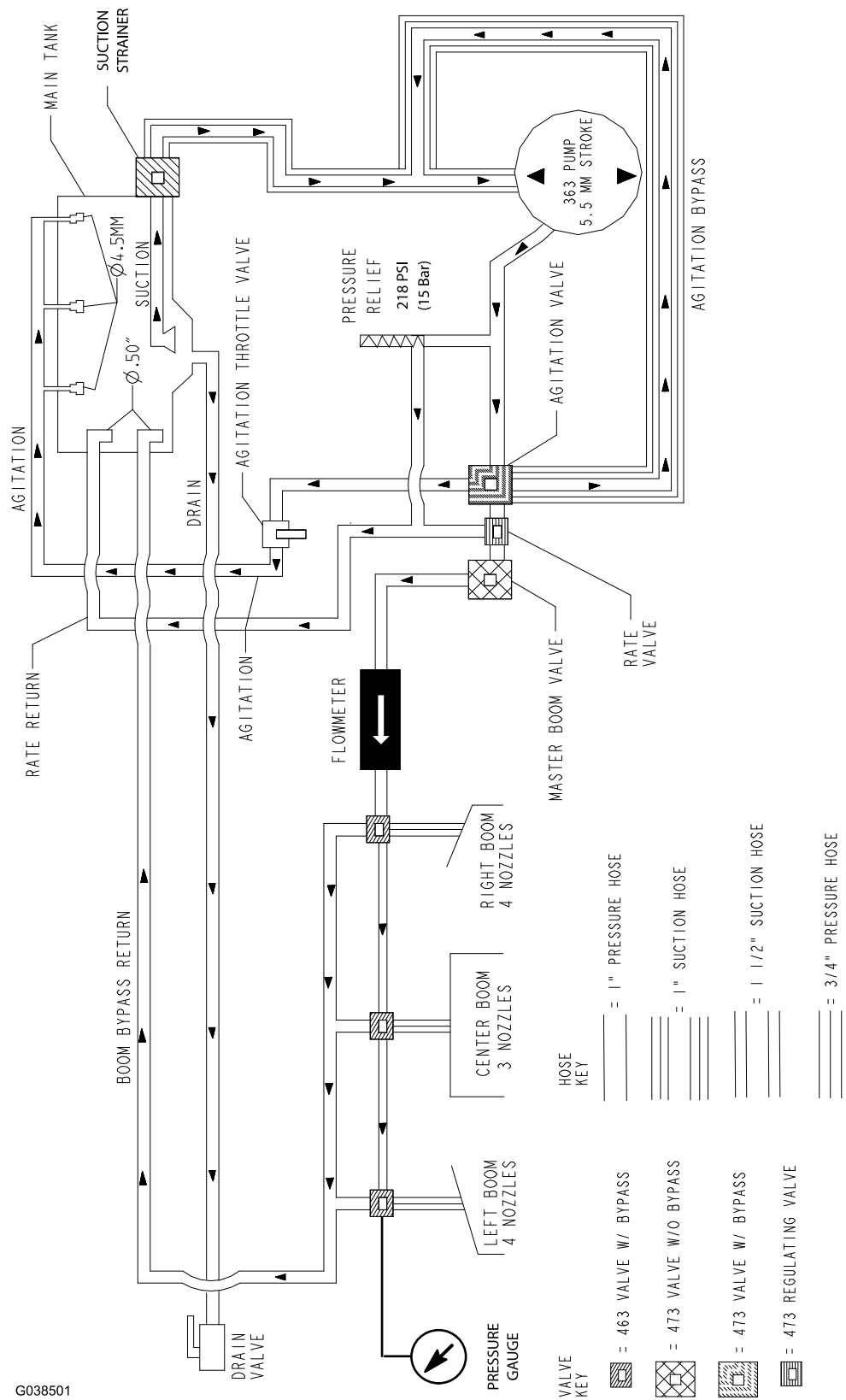
- **For short-term storage** (less than 30 days), clean the sprayer system; refer to your *Operator's Manual*.
- **For long-term storage** (longer than 30 days), clean the agitation valve and the 3 section valves; refer to [Cleaning the Agitation and Section Valves \(page 53\)](#).

Troubleshooting

Troubleshooting the Spray System

Problem	Possible Cause	Corrective Action
A boom section does not spray.	<ol style="list-style-type: none"> 1. The electrical connection on the boom valve is dirty or disconnected. 2. The fuse is open (blown). 3. A hose is pinched. 4. A boom-bypass valve is improperly adjusted. 5. The boom-section valve is damaged. 6. The electrical system is damaged. 	<ol style="list-style-type: none"> 1. Turn the valve off manually. Disconnect the electrical connector on the valve and clean all leads, then connect it. 2. Check the fuses and replace them as necessary. 3. Repair or replace the hose. 4. Adjust the boom-bypass valves. 5. Contact your Authorized Service Dealer. 6. Contact your Authorized Service Dealer.
A boom section does not turn off.	<ol style="list-style-type: none"> 1. The valve is damaged. 	<ol style="list-style-type: none"> 1. Disassemble the boom-section valve; refer to the Cleaning section. Inspect all of the parts and replace any that are damaged.
A boom valve is leaking.	<ol style="list-style-type: none"> 1. An O-ring is deteriorated. 	<ol style="list-style-type: none"> 1. Disassemble the valve and replace the seals using the Valve Repair Kit; contact your Authorized Service Dealer.
The pressure drops when you turn on a boom.	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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.	<ol style="list-style-type: none"> 1. A thermal breaker in the fuse block that is responsible for powering the actuator has been tripped due to overheating. 2. A thermal breaker in the boom actuator that is responsible for powering the actuator has been tripped or malfunctioned. 	<ol style="list-style-type: none"> 1. Wait for the system to cool down before resuming operation. If the thermal breakers trip repeatedly, contact your Authorized Service Dealer. 2. Contact your Authorized Service Dealer.

Schematics



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Flow Diagram (Rev. A)

Notes:

Notes:



Count on it.