

# ReClaim™

## Reclaim Installation Guide

 Precision Planting®

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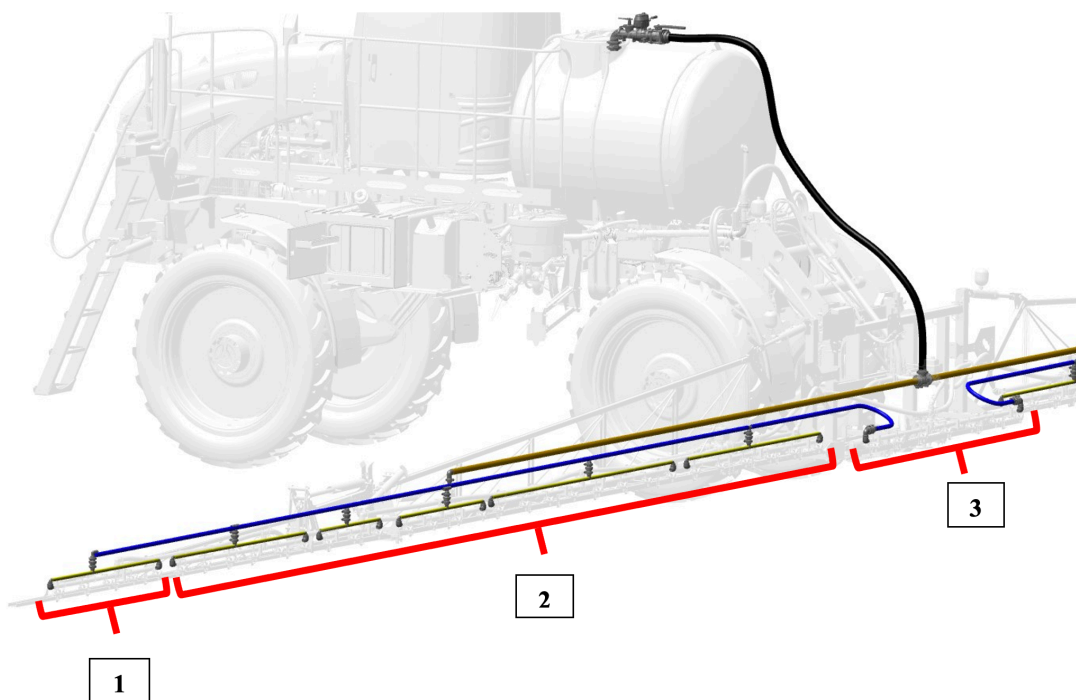
## Overview

The ultimate purpose of the Reclaim system is to provide a path back to the tank from the nozzle bars. The Below Image is one high level example of how this can be done. The different size lines are represented as follows:

- Yellow — 3/4"
- Blue — 1"
- Brown — 1 1/2"
- Black — 2"

Furthermore, there is a check valve between the yellow and blue lines that prevents backflow of the fluid. Additional features of the system may include:

- Pressure reduction valve assembly-for situations where a pump cannot control the system pressure below a mechanical nozzle's spraying pressure
- Air purge assembly-optional for sprayers without an existing air purge system



- 1 — **Breakaway Boom**: Outer most boom on either end of sprayer
- 2 — **Wing Boom**: Any boom between the center boom and breakaway boom
- 3 — **Center Boom**: Boom in center of sprayer

## Parts and Tools Needed

### Parts and Tools Needed (not provided)

Part/Tool		Notes:
Rectorseal #21 black pipe thread sealant or Black RTV silicon		Use for all NPT threaded connections
Plasma Cutter		Use for cutting hole in stainless steel tank
Part Number	Hole saw assembly for stainless steel tank (if not using plasma cutter)	Quantity
McMaster-Carr #4192A39	3" Hole Saw, Carbide-Tipped	1
McMaster-Carr #4066A79	Arbor	1
McMaster-Carr #2956A24	1/4" Drill Bit, Carbide	1
McMaster-Carr #1011K11	Lubricant for Stainless Steel, 1 Gallon	1
McMaster-Carr #4527T35	[OPTIONAL] Squeeze Bottle for Lubricant	1

# Nozzle Bar Adapter and Plumbing Installation

## Installation Steps

**Note:** Pay attention to the orientation of all clamps when installing the system. Hose clamps and the ends of the flange clamps should be oriented so that they do not rub on any hoses or electrical wires to prevent vibration from causing damage during operation.



Also be aware of contact points when the boom folds and make sure the hoses and fittings are routed to clear these contact points.



**Note:** It can be helpful to use a lubricant on the hose barb fittings and/or hose barb prior to installation of the hose. Dish soap is an effective lubricant for hose installation.

**Step 1:**

**Remove the end cap/plug/adapter from the ends of each nozzle bar and identify what adapter kit will be needed.** Only remove the cap/plug/adapter from ends that terminate. If there is a supply hose at the end of the nozzle bar, it will remain in place. The figures below show multiple different end cap options. Make sure you have the correct nozzle bar end fitting/adapter kits for the end cap style you are installing. Some machines may have more than one end cap style installed.



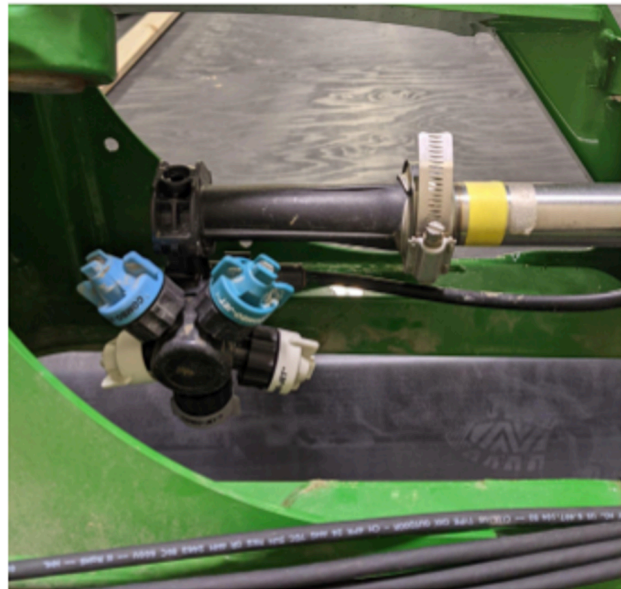
Hypro Aspirator-Use 723006



1" MPT-Use 723234



1" FPT-Use 723235



JD Aspirator-Use 723005





Wilger TWS-Use 723160

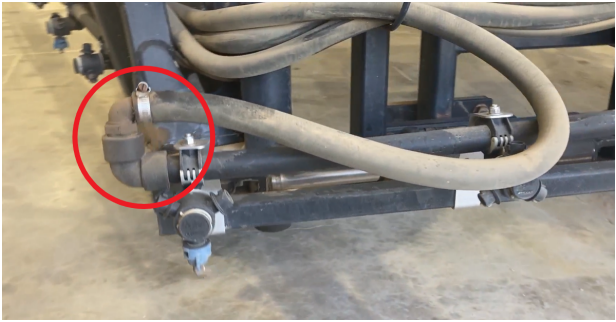


TeeJet Dry Boom-Use 723178 or 723179



Fast Beaded End-Use 723161

**Note:** Do not remove any OEM hose plumbing from the nozzle bars. If a nozzle bar is supplied at the end or two nozzle bars are daisy chained together with hose DO NOT remove the lines, this plumbing will remain as is. See pictures below for examples.



## Step 2:

**Assemble and install the nozzle bar end fitting kits.** Read all of this section of the manual before proceeding with the installation.

### Tips:

- On some installations it may be difficult to install the nozzle bar end fitting kits onto the end of the nozzle bar due to clearance issues to the frame of the boom. It may be necessary to loosen and slide the nozzle bar or take the clamps off and drop the end of the nozzle bar down to install the fitting kit. Return the nozzle bar to its original location after installation.
- Use RectorSeal Tru-Blu or RTV thread sealant on all threaded fittings.
- When installing the assemblies to the nozzle bars, orient them so that they will not be damaged when folding the sprayer boom.
- Orient end fitting kits so that movement of the spray turrets is not impeded.
- Orient metal clamps so that they do not rub on hoses or electrical wires to prevent future damage.
- If the nozzle bar end is threaded, most situations will require threading the fitting on the nozzle bar prior to adding the return assembly.
- For threaded connections follow the tightening instructions listed by the pipe sealant being used.
- If the nozzle bar end is not threaded and enough clearance exists, it can be advantageous to assemble the nozzle bar end fitting kits t the recirculation fitting kit parts before installing on the machine. See section 2b for determining which recirculation fitting kit is needed at each location

### 2a. Instructions for the different types of nozzle bar end fitting/adapters

- a: **Threaded MPT (723234) or FPT (723235):** Thread the nozzle bar end fitting onto the nozzle bars



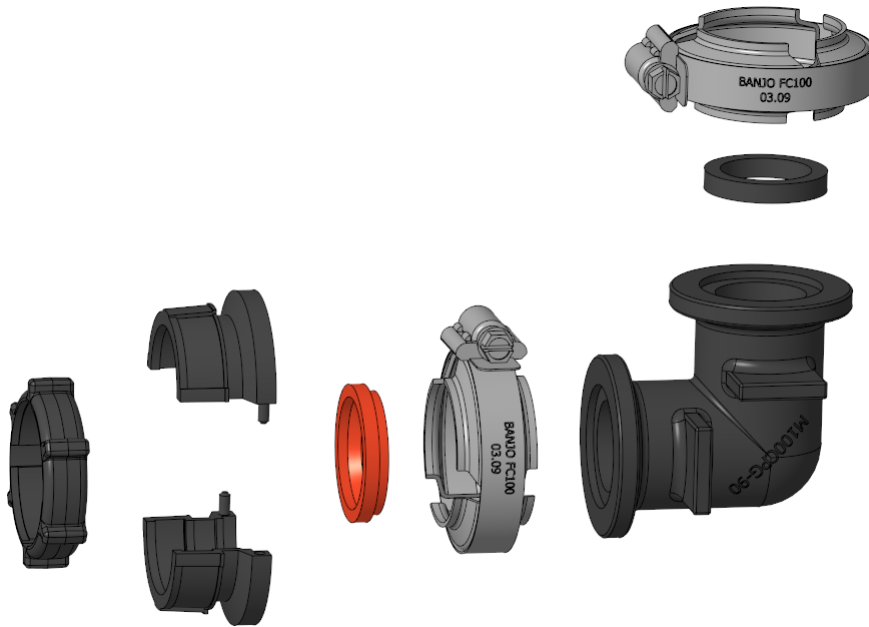
- b: **John Deere aspirator kit (723005)** Remove the flange clamp and existing aspirator from the nozzle bar. Transfer the spray nozzle assembly to the new aspirator. Using the original flange clamp, install the new aspirator on the machine. Assemble the new adapter elbow to the correct recirculation fitting end adapter (see Section 2b below). Install on each nozzle bar end using the included wire retainer. **Install the hose support after installing the hose; it should be zip tied in place as close as possible to the end, between the rubber hose and the nozzle bar.**



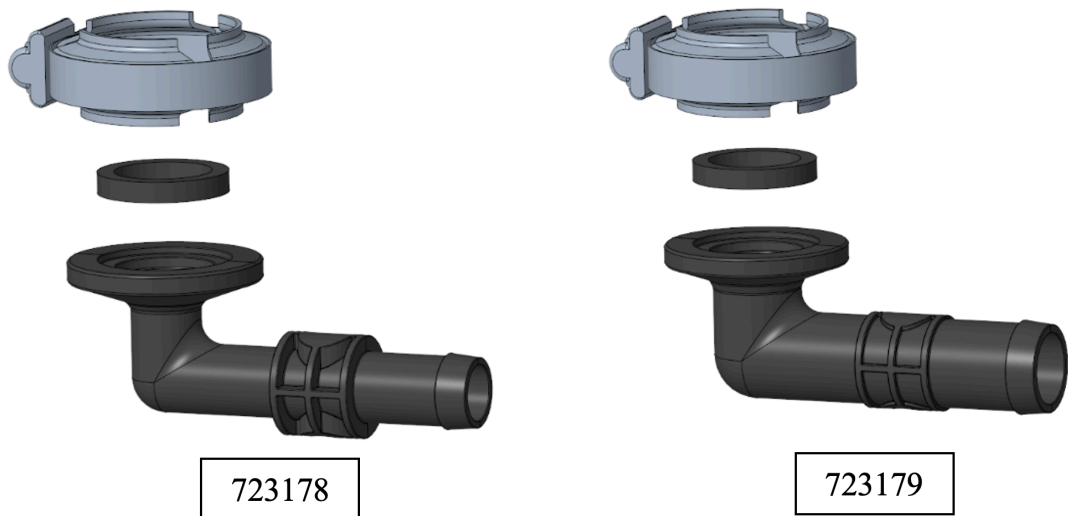
- c: **Hypro aspirator (723006)** Remove the wire retainer and plug from the end of the nozzle bar. Assemble the “Hypro adapter elbow” to the correct recirculation fitting end adapter (see section 2b below). Install to each nozzle bar end using the included retaining clip. **Install the hose support after installing the hose; it should be zip tied in place as close as possible to the end, between the rubber hose and the nozzle bar.**



- d: **Wilger TWS (723160)** Remove the existing end fitting or valve from the end of the nozzle bar. From the 723160 kit, install the “binding nut” and two adapter halves to the end of the nozzle bar. Install the TWS to flange seal and then the 1” elbow and clamp. Use the other clamp and seal to install the correct recirculation fitting end adapter (see Section 2b below).



- e: **TeeJet dry boom (723178-3/4” or 723179-1”)**: Assemble the adapter to the correct recirculation fitting end adapter using the provided seal and clamp (see Section 2b below). Remove the last nozzle from the dry boom (it is possible that the hose may have to be cut and replaced). Install the nozzle body on the new adapter. Install on the end of the nozzle bar and secure to the hose/boom.





- f: **Beaded end adapter (723161):** Remove the existing clamp and fitting from the end of the nozzle bar (it is possible that the hose may have to be cut and replaced). Assemble the adapter to the correct recirculation fitting end adapter (see Section 2b below). Install the assembly on the end of the nozzle bar and secure with the original clamp.



## 2b. Specific instructions for each nozzle bar location and type

a: **Center of Machine:** The center of the machine can have 2 different configurations as listed below.

- **Location = Center of machine; Type = single nozzle bar.** (Use 723152 or 723156 depending on end fitting type) Assemble the components within the kit using the provided flange gasket and clamp. Install assembly to the sprayer nozzle bar as shown in the red circles below. Wait to install any hose.



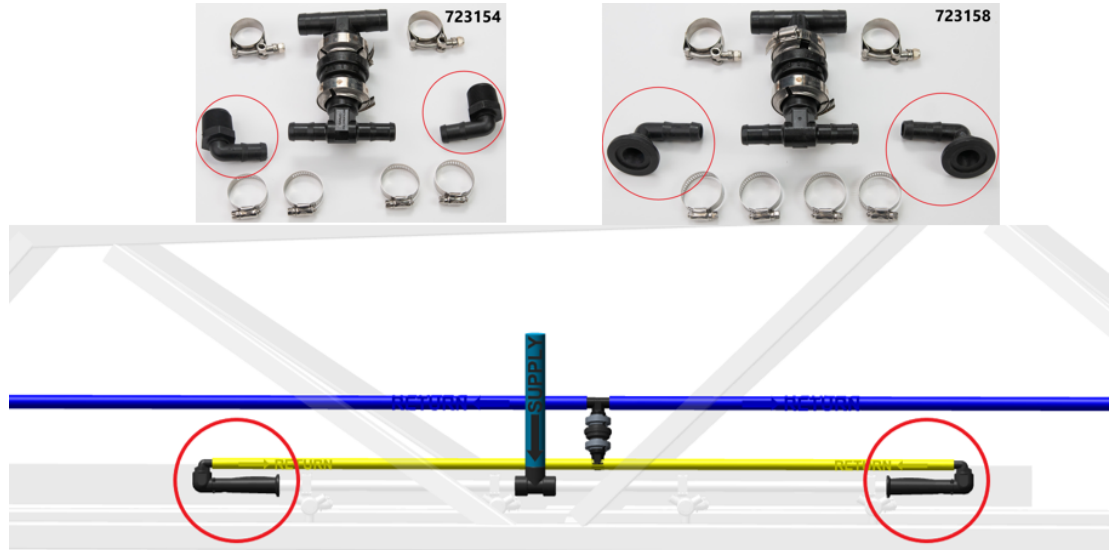
- **Location = Center boom; Type = Two nozzle bars:** (Use 723153 or 723157 depending on end fitting type) Install the components circled in red below to the sprayer nozzle bar. Wait to install any hose.



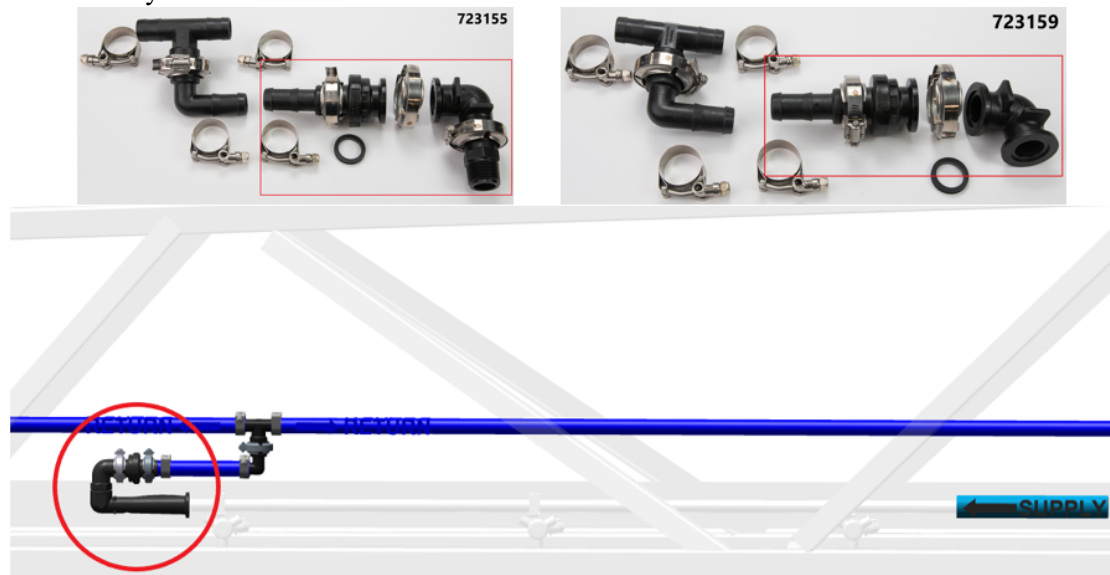
**Note:** If the center section has no end caps, but rather feeds another section with an outgoing hose, then treat the fed section as a breakaway section to determine the proper fitting configuration.

b: **Wing Booms (not including breakaway section):** The wing booms can have 2 different configurations as listed below.

- **Location = Wing boom, Type = center fed nozzle bar:** (Use 723154 or 723158 depending on end fitting type) Install the components circled in red below to the sprayer nozzle bar. Wait to install any hose.

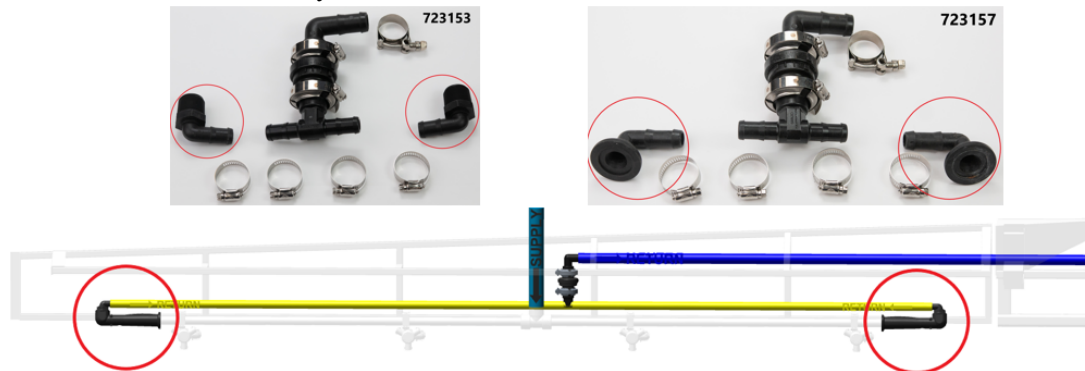


- **Location = Wing boom; Type = end fed nozzle bar:** (Use 723155 or 723159 depending on end fitting type) Assemble the components within the kit using the provided flange gasket and clamp. Install assembly to the sprayer nozzle bar as shown in the red square below. Wait to install any hose.

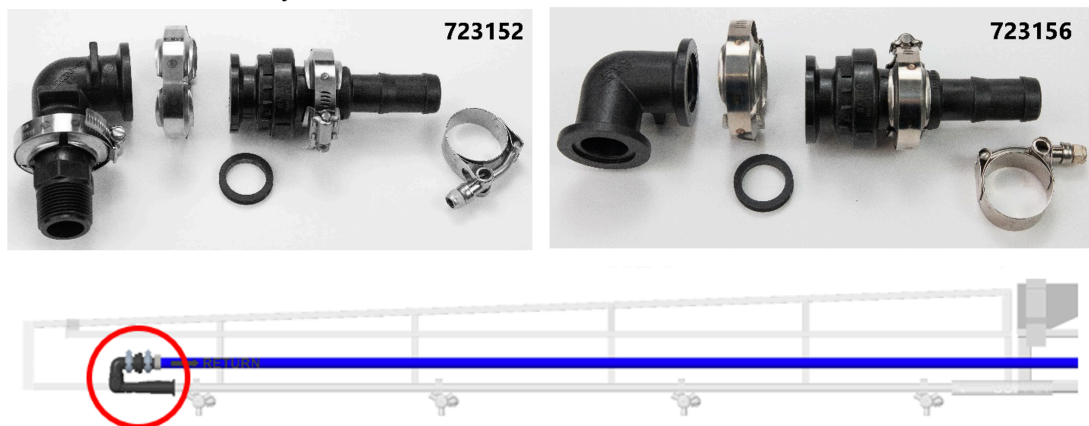


c: **Breakaway Section:** The breakaway sections can have 2 different configurations as listed below.

- **Location = Breakaway boom; Type = center fed nozzle bar:** (Use 723153 or 723157 depending on end fitting type). Install the components circled in red below to the sprayer nozzle bar. Wait to install any hose.



- **Location = Breakaway boom; Type = end fed nozzle bar:** (Use 723152 or 723156 depending on end fitting type) Assemble the components within the kit using the provided flange gasket and clamp. Install assembly to the sprayer nozzle bar as shown in the red circle below. Wait to install any hose.



### Step 3:

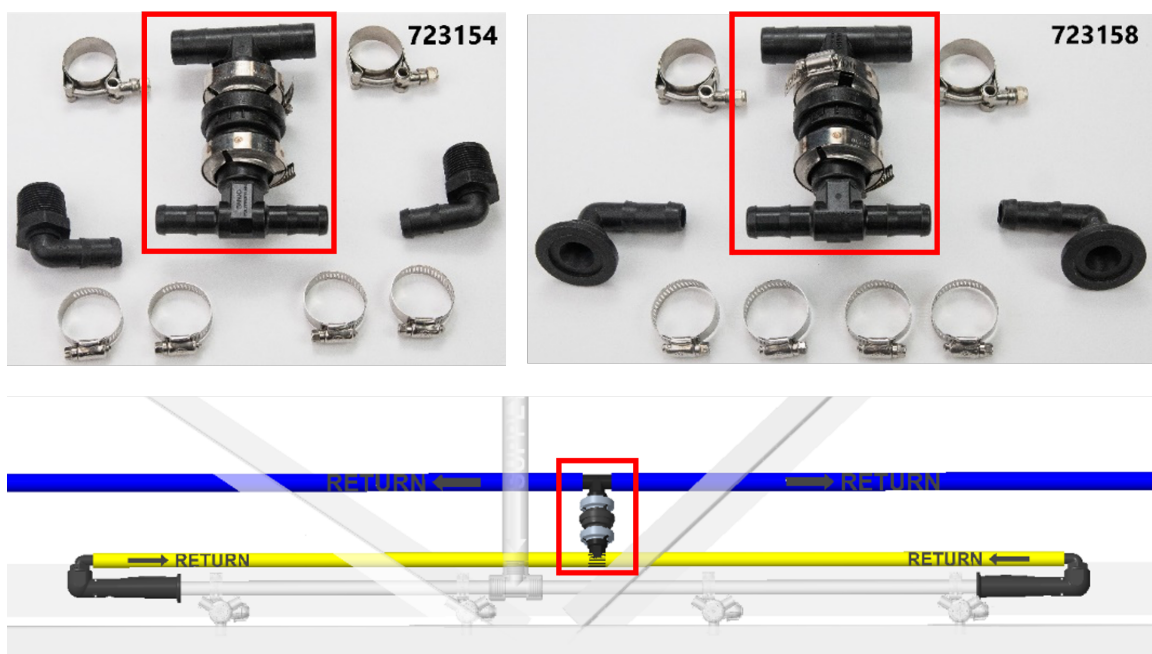
**Install any necessary check valve (or tee) assembly and hose for each nozzle bar.** In this step you will install the tee assembly that will allow for a 1" return line all the way across the left boom and a separate 1" return line all the way across the right boom, which will tie together each nozzle bar return. The 1" hose will be installed in the next step.

- a: **Location = Center of machine; Type = single nozzle bar.** No tee assembly is installed here. Move to step 4.
- b: **Location = Center of machine; Type = Two nozzle bars.** Install the “check valve assembly” near the center of the nozzle bar (from kit 723153 or 723157). Route 3/4" hose across the nozzle bar to connect the recirculation fitting at each end of the nozzle bar (installed in step 2) to the tee assembly, as indicated by the yellow lines in the drawing below. Use the (4) smaller hose clamps to secure the 3/4" hose.



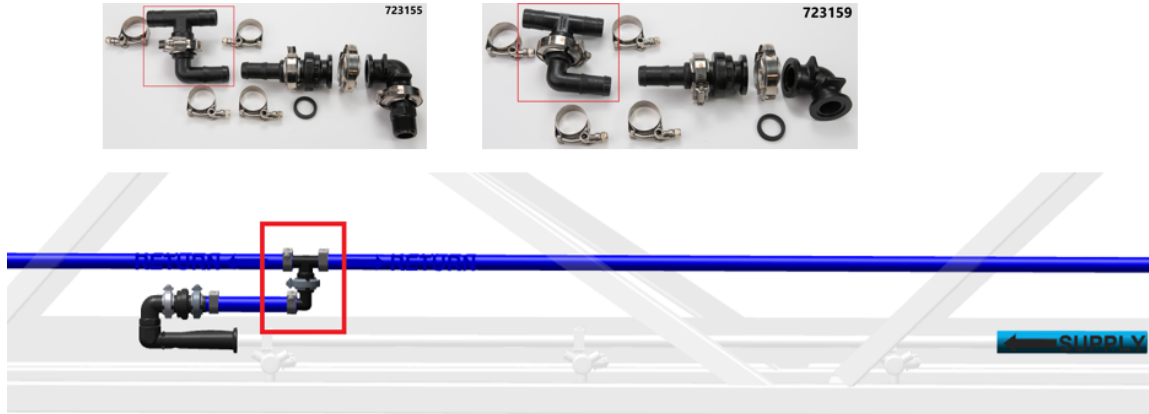
- c: **Location = Boom wing, Type = center fed nozzle bar (skip breakaway section)**— Install the “check valve assembly” near the center of the nozzle bar (from kit 723154 or 723158). Route 3/4" hose across the nozzle bar to connect the recirculation fitting at the ends of the nozzle bar (installed in step 2) to the tee assembly, as shown by the yellow line in the below drawing. Use the (4) smaller hose clamps to secure the 3/4" hose.

**Exception:** If the nozzle bar closest to the center section is fed by a hose coming from the nozzle bar end of the center section, treat this fed section as a breakaway boom for the correct plumbing configuration.



- d: **Location = Boom wing; Type = end fed nozzle bar (skip breakaway section).** Install a section of 1" hose from the recirculation fitting at the end of the nozzle bar (installed in step 2) to the 1" hose barb elbow on the tee assembly (from kit 723155 or 723159). Note: This 1" hose can be short (typically 12-18"). Use (2) clamps from the kit to secure the hose.

**Exception:** If the nozzle bar closest to the center section is fed by a hose coming from the nozzle bar end of the center section, treat this fed section as a breakaway boom for the correct plumbing configuration..



- e: **Location = Breakaway boom; Type = center fed nozzle bar.** Install the “check valve assembly” near the center of the nozzle bar (from kit 723153 or 723157). Route 3/4" hose across the nozzle bar to connect the recirculation fitting at each end of the nozzle bar (installed in step 2) to the tee assembly. Use the (4) smaller hose clamps to secure the 3/4" hose.



- f: **Location = Breakaway boom; Type = end fed nozzle bar.** No tee assembly is installed here. Move to step 4.



**Step 4:**

**Connect all nozzle bars with 1” hose as the return boom.**

- a: Connect the check valve assembly from each nozzle bar across the left side of the machine together to create a 1” boom across the left side of the machine (also connecting the left side of the center boom). Follow the OEM hose routing as much as possible to avoid pinch points and fold points. Especially be aware of all contact points when the boom folds to avoid pinching any hose or fittings. The 1” hose is indicated by the **blue** line in the drawing below.



- b: Repeat on the right side of the spray boom, connecting each nozzle bar across the right side of the machine together to create a 1” boom across the right side of the machine (also connecting the right side of the center boom).

**Step 5:**

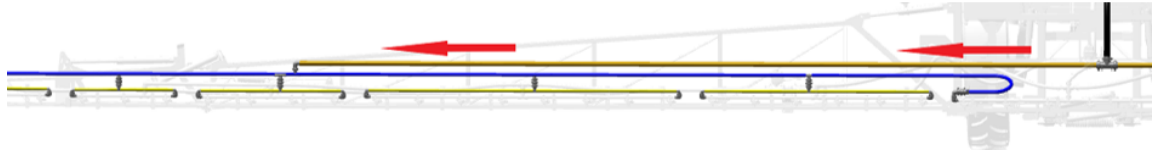
**Install the main return tee.** Select a location near the center of the machine where the 2” return line can run to the top of the tank (likely following the routing of the main supply line through the center boom tree). Use the 1 1/2” barb tee to 2” straight barb assembly from the 723001 ReClaim Base Kit and locate where it will be on the machine (it does not need to be secured to the machine now).



### Step 6:

#### Install the 1 1/2" return hose from each wing.

- a: Route 1 1/2" hose from the fitting in step 5 to the approximate center of the spray boom on the left side (pay attention to how much 1 1/2" hose you have so you have enough for the right side). This is indicated by the **brown** line in the below picture.

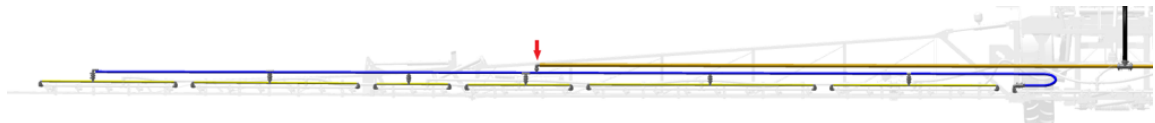


- b: Repeat on the right side boom wing.

### Step 7:

#### Install the 1" tee barb to 1 1/2" 90° barb fitting.

- a: At the approximate center of the left hand wing, where the 1 1/2" hose from step 6 reached, find a good location to cut into the 1" boom you created. From the 723001 ReClaim base kit, install the 1" barb tee to 1 1/2" 90 degree barb assembly. Secure with (2) of the 1" T-bolt hose clamps and (1) of the 2" T-bolt hose clamps from the 723001 kit.



- b: Repeat on the right side boom wing.

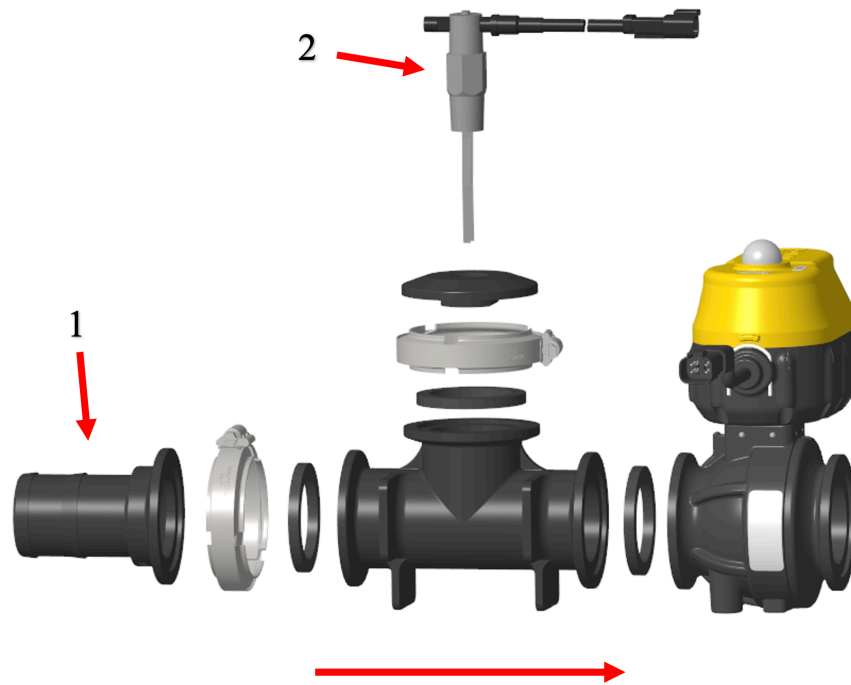


## Valve Assembly Installation

### Step 1:

#### Assemble the ReClaim valve assembly.

- a: Assemble the kit following the diagram below. The parts to assemble this are found in the 723001 ReClaim Base Kit.
- b: Fitting (1) is a 2" straight hose barb.
- c: Ensure the arrow on the top of the Flow Indicator Switch (2) points in the direction of flow to the tank (flowing from the valve to the flow indicator).



## Step 2:

**Prepare a location on the tank for the ReClaim valve assembly.** It will be necessary to have a bulkhead connection at the top of the tank to return flow through. If there is an unused bulkhead present, it is possible to connect the ReClaim valve assembly to this location. The appropriate fittings vary by sprayer and may not be included in the kit if it is not a 2" NPT connection. It is also possible to tee into a bulkhead connection being used, but it is not recommended to tee into the tank overflow bulkhead. If there is not an existing bulkhead connection that is able to be used, one will need to be installed.

- a: Choose an appropriate location on top of the tank to add the tank port bulkhead fitting. **This location needs to be within arm's reach of the tank lid so that the bulkhead fitting can be installed from the inside.** Use the previously assembled valve assembly to make sure the selected location has enough room for it before cutting the hole.
- b: From the 723001 kit, use the 3" bulkhead fittings threaded lock nut to mark the hole to be cut.

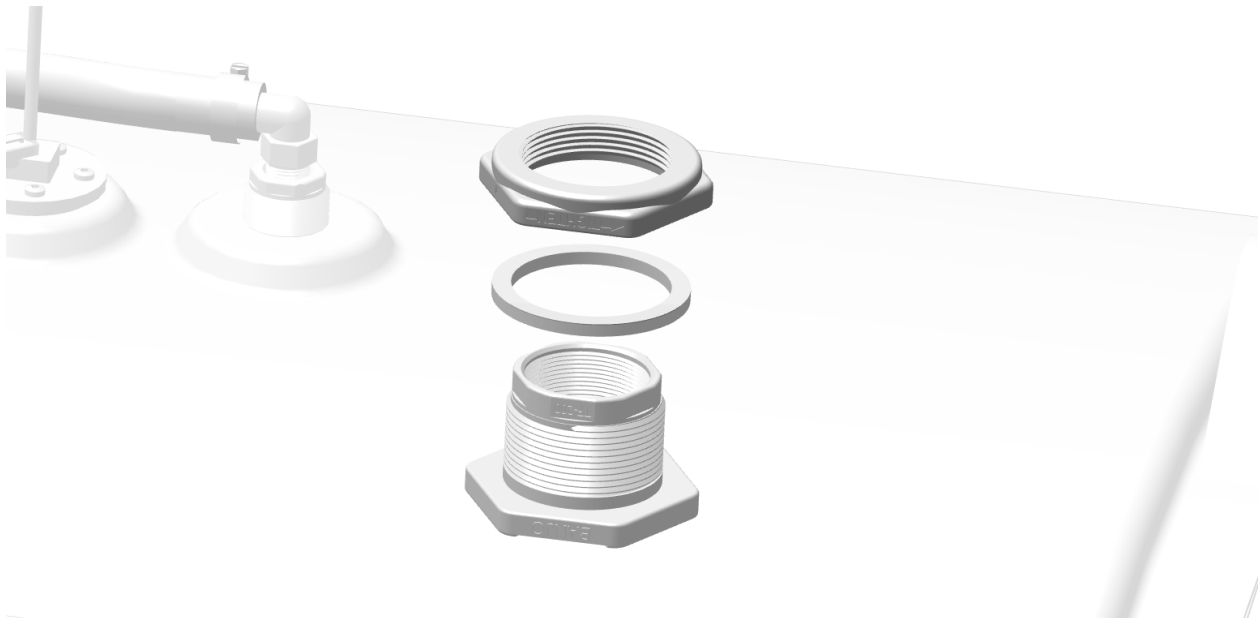


- c: For stainless steel tanks, cut the hole using either a plasma cutter or the recommended hole saw (not provided). If cutting with a plasma cutter, cut 95% of the circle, and then pry the cutout up and hold with pliers when making the final cut to prevent the cutout from falling into the tank. If cutting with a hole saw, hold a bucket under the hole being cut to catch shavings and the hole blank. Plastic tanks can easily be cut with a conventional hole saw.



**Note:** Flush the tank before operating to remove any material that may have fallen into the bottom of the tank during the cutting process.

- d: Install the bulkhead fitting. The fitting is installed from the inside out, with the gasket on the inside as well. Tighten the locking ring. Then thread into this fitting the 2" MPT to 2" flange 90 degree fitting (seen in the image for step 3 below).



### Step 3:

#### Install the ReClaim valve assembly

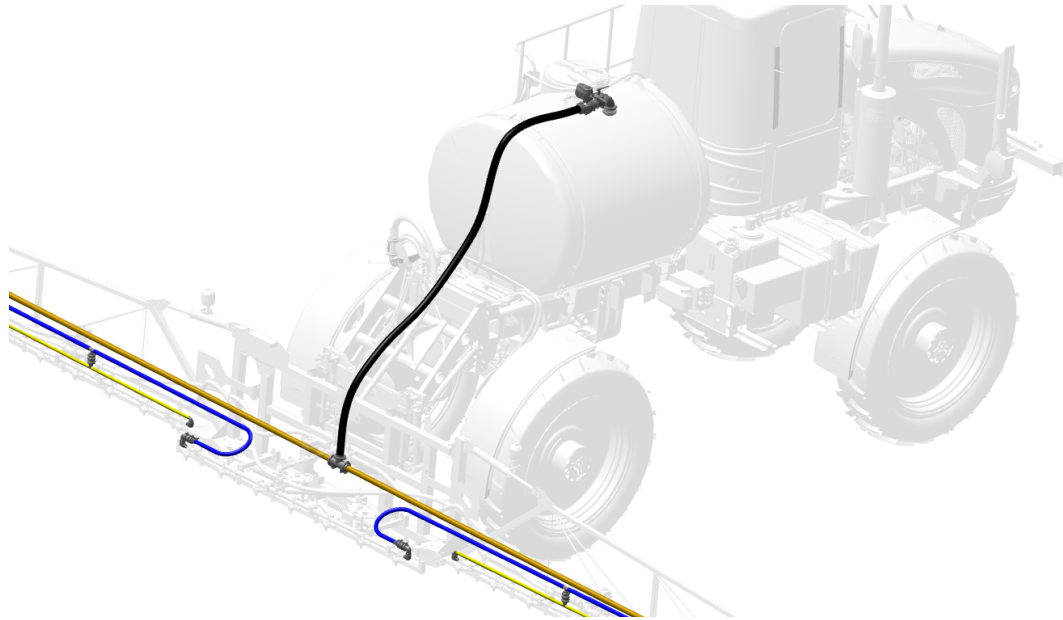
Mount the reclaim valve assembly to the fitting on top of the tank. Use the gasket and clamp provided. Install the electronic valve closest to the bulkhead to minimize the stress being applied to the fitting. Once again, ensure the arrow on the flow switch is pointing in the direction of flow.



**Step 4:**

**Connect the valve assembly to the main return tee (from step 1)**

- a: Route the 2" hose (shown in black) from the 1.5" boom return tee up to the top of the tank. It is generally recommended to follow the existing supply hoses from the tank through the boom lift assembly. Ensure the routing allows for the boom carriage to travel up and down without kinking the hose.
- b: Secure the 2" hose on each end with a 2" hose clamp.



# Pressure Reduction Kit Installation

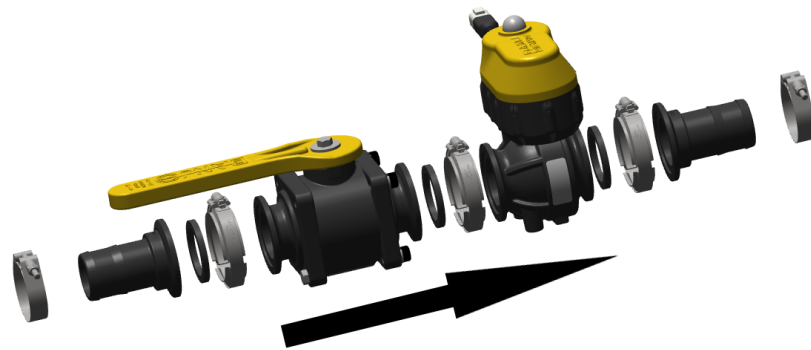
## Step 1:

### Pressure reduction kit installation (when necessary) — Kit 723151

The pressure reduction valve is needed on any sprayer that has mechanical or diaphragm nozzles and cannot lower the pump pressure below the cracking pressure of the nozzles. Most systems can accomplish this in manual mode by lowering the speed of the pump. Some systems allow the user to set the target pressure below the nozzle's cracking pressure but will not actually allow the system to get to that low pressure (common on John Deere control systems). If that is the case, then the pressure reduction kit is necessary. PWM or electronically controlled on/off nozzle systems do NOT need the restrictor valve.

- a: Select a location to install the pressure reduction valve in the supply line between the product pump and the spray boom. It is strongly recommended to install this before the boom pressure sensor, so the operator knows what boom pressure is when operating ReClaim. Some installations will have a 2" full port flange where the pressure reduction valve could be installed; other installations will require cutting into the supply line.
- b: Assemble the hose barb fittings to the pressure reduction valve as shown below (if needed). If installing the air purge install it after the pressure reduction valve.
- c: Cut the supply line (if needed) and install the valve assembly.

#### Pressure Reduction Kit without Air Purge Installed







## Air Purge Installation

### Step 1:

**Assembly.** Assemble the air fittings kit as shown using some type of thread sealant. Two hose barb fittings are included: 2" and 1.5. Use the appropriate fitting for the size of the supply line that the air purge will be installed on. Use the tee push-to-connect fitting to splice into one of the onboard air supply lines if present. Install the quick attach airline fitting if there is not compressed air on the machine and shop air will be used. The quick attach airline fitting can be screwed directly into the ball valve.



- a: If no pressure reduction valve was installed, select a location to install the air purge assembly in the supply line. The air purge assembly must be downstream of a manual ball valve. If a manual ball valve is not present on the system, one will need to be installed.



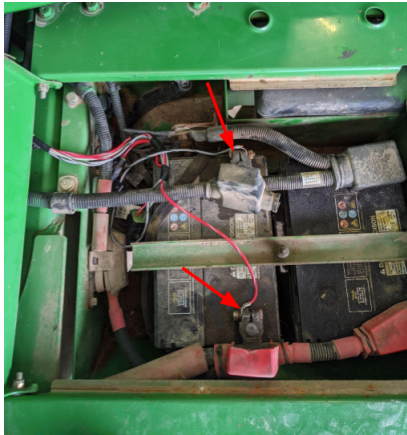


# Harness and Switch Installation

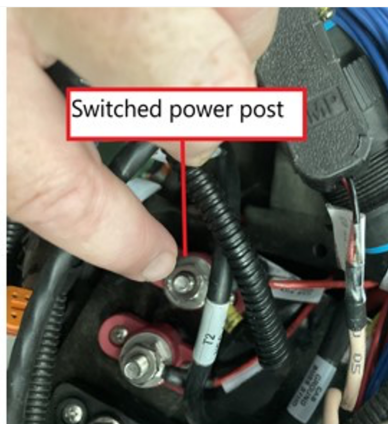
## Step 1:

### Install the Main ReClaim harness

- a: Connect the power leads to the battery to get a constant power supply. Route the harness from the battery compartment to the area between the tank and back window behind the cab. Position the fuse holder and relay on the harness in a position such that they can be easily reached for service.



- b: Route the tank harness up to the valve assembly on top of the tank. Plug into the electronic recirculation valve and the flow indicator switch.
- c: If the pressure reduction valve was installed, route the connection to the electronic pressure reduction valve. If there was not a pressure reduction valve installed, leave the electrical cap in place to protect this connection. Secure any extra harness to protect it from damage.
- d: Route the harness into the cab. If necessary, drill a 2" hole in the bottom of the cab with a step bit. Remove the ReClaim switch from the harness and route the harness into the cab. Install the grommet into the hole you created at the bottom of the cab.
- e: Connect the 3-pin power port to the convenience port in the cab. This will provide the system with key switch power. If there is not a 3-pin connection, you will have to find a connection in the cab to connect to keyed power.

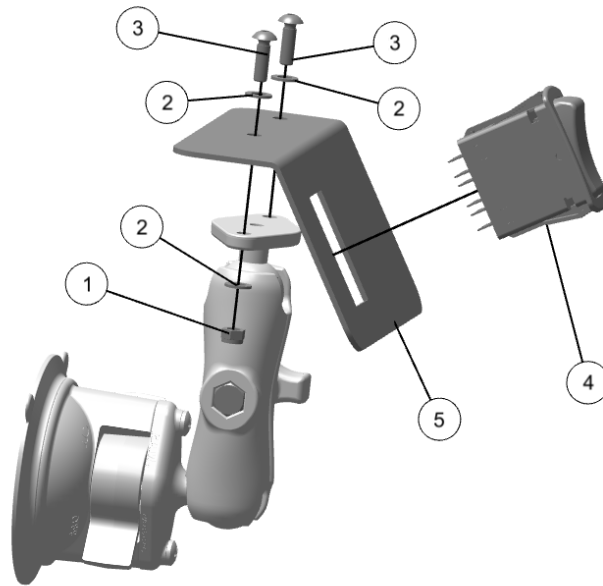


**Note:** Sometimes there is a keyed power lug or wire hidden under some paneling in the cab. If needed, contact product support for other adapter harness options.

## Step 2:

### ReClaim Switch Installation

- a: Option 1: Use the ReClaim Bracket Kit. Remove the toggle switch from the base harness and install it in the cab bracket as shown. Position the switch in the bracket such that the recirculation indicator is the top position. Use the provided hardware and secure plate (5) to the ram mount. Snap Switch (4) through the hole in Plate (5). The suction cup can then be added to any window in the cab.



- b: Option 2: Install the switch in an unused position in the OEM switch panel. In this example, the panel had to be removed and the OEM hole had to be made larger to fit the ReClaim switch.



c: Connect the ReClaim harness to the ReClaim switch.



## Post Installation Verification

### Step 1:

Run the ReClaim system one section at a time to verify each section gets flow back to the tank.

- a: In order, turn on the ReClaim, product pump, and master spray switch. If the master spray switch is turned on before ReClaim, product may spray out the nozzles. The bottom “bar” on the switch will illuminate, this indicates that the system is active.



- b: Turn off all section valves except for one. Verify on the ReClaim switch that product is flowing back to the tank. This is indicated by the illumination of the green “circle” flow indicator light on the ReClaim switch being illuminated. Turn off the first section and turn on the next section, repeat for every section verifying each section indicates flow back to the tank.



- c: If any section does not indicate flow to the tank, inspect the plumbing for a check valve that has been installed backwards.

**Note:** If there is a section with multiple spray bars plumbed together from one section valve, this procedure does not confirm that all check valves in that section are installed correctly.



## Step 2:

### General tips

- a: After getting fluid through all the ReClaim plumbing, it may be required to recalibrate any auto boom height system to accommodate for the extra weight of the hose and product.
- b: Some PWM systems will open the nozzles when the section valves are opened, which will not allow for product to be returned to tank and cause product to spray on the ground. If this is the case, check with the display OEM if there is a “mode” that can be used to open the section valves without opening the PWM nozzles. If not, follow the following procedure:
  1. Open section valves
  2. Unplug section valves-leaving them in a permanently open state
  3. Close section valves

At this point the section valves will be disabled and the sections will be controlled by the PWM valves.

- c: If any spray bar is supplied with product in two locations on the spray bar, there is the opportunity for a “dead” zone in between the two supply points that does not recirculate. In this case, for complete system cleanout, a manual valve could be installed on one of the supply points and closed when the ReClaim system is used.



- d: In some scenarios, the spring tension on the breakaway section may need to be adjusted. If the breakaway sections are “breaking away” without hitting anything, increase the spring tension until they perform as expected.