3RIVE 3D®
APPLICATION SYSTEM

Application System

Installation Manual

Micro-Trak Systems, Inc.
Limited Warranty

Micro-Trak Systems, Inc. (herein "Seller") warrants to the original purchaser (herein "Buyer") that, if any product or part of the product (herein "Parts") proves to be defective in material or workmanship, upon inspection and examination by Seller, within three (3) years from the original date-of-purchase, and is returned to Seller with dated proof-of-purchase, transportation prepaid, within sixty (60) days after such defect is discovered, Seller will, at their option and sole discretion, either repair or replace said part, except that the warranty for expendable Parts, including but not limited to, light bulbs, batteries, hose and tubing, nuts, bolts, screws and other fasteners shall be thirty (30) days from the original date-of-purchase; and except that the warranty for Parts manufactured by someone other than the Seller, including but not limited to, shut-off valves, control (servo) valves, flowmeters, pressure sensors and regulators, pumps, motors, compressors, tanks and tank accessories, DGPS receivers and related repeater and base stations shall be one (1) year from the original date-of-purchase; and except that the warranty for Parts manufactured by someone other than the Seller, including but not limited to, memory cards and drives, mapping software, terminals, PC's, laptops, tablets and other computer devices shall be thirty (30) days from the original date-of-purchase. Any damage or failure to said part resulting from abuse, misuse, neglect, accidental or improper installation or maintenance, unauthorized modification, use with other parts and/or products, or attributable to acts of God, as determined solely by the Seller, will invalidate the warranty. Said part will not be considered defective if it substantially fulfills the performance specification. Buyer shall be responsible for all maintenance services, if any, all in strict accordance with the procedures outlined in the manual. The warranty does not include labor, installation, replacement parts or repairs, delivery of replacement parts or repairs or time and travel. Said warranty is non-transferable.

THE FOREGOING WARRANTY IS EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES OF MERCHANTABILITY, FITNESS FOR PURPOSE AND OF ANY OTHER TYPE, WHETHER EXPRESS OR IMPLIED. The Seller's liability, whether in contract, in tort, under any warranty, in negligence or otherwise, shall not exceed the return of the amount of the purchase price paid by the Buyer, and under no circumstances shall the Seller be liable for special, indirect, consequential, incidental or punitive damages. Seller neither assumes nor authorizes anyone to assume for it any other obligation or liability in connection with said part. No action, regardless of form, arising out of the transactions under this agreement may be brought more than one (1) year after the cause of action has occurred.

Buyer accepts these warranty terms and limitations unless the part is returned to Seller, via proper distribution channels and approved return authorization, with dated proof-of-purchase, transportation prepaid, within sixty (60) days from the date-of-purchase for refund of the purchase price.

Source Doc: MTS Warranty Statement 080120

Contents

Important Considerations

Informational items are indicated by this symbol.

Warnings are indicated by this symbol. Failure to heed these items may result in personal injury or equipment damage.

The main installation steps are shown in ***bold italicized text*** in the table of contents. These can be performed in any order, or concurrently unless otherwise noted on the procedure heading.

When routing wiring, take care to accommodate planter folding / unfolding pivots and pinch points.

CAREFULLY fold and unfold planter to verify cable routing.

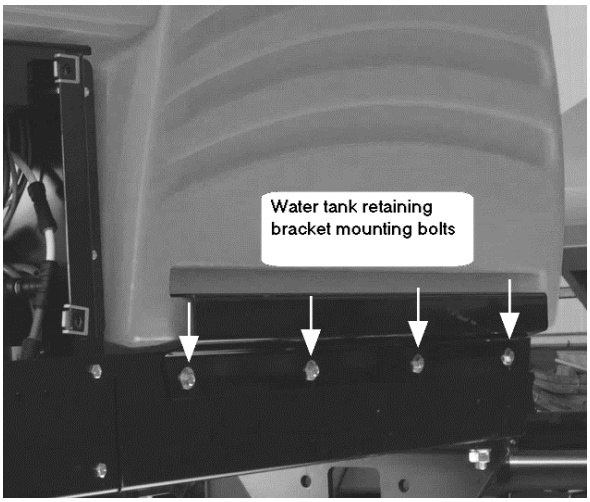
Keep in mind that existing planter cabling, hoses and hydraulic lines will slide while folding the planter and when planter is in operation. Make sure 3RIVE 3D® components will not be pinched or abraded during planter folding or operation.

Install Tank Assembly

If extended fork tines or some other method is available, the tank assembly can be set on the planter fully assembled. However, to allow for manually lifting of the tank assembly into place some disassembly is required.

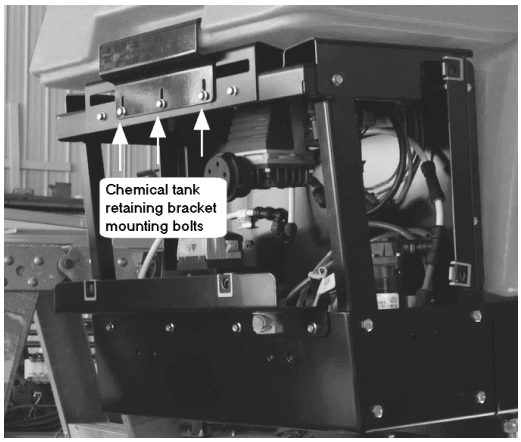
1. Disassemble Tank assembly as required.

   Remove 4 bolts holding a water tank retaining bracket on either side of the water tank and remove bracket. Lift water tank off frame.

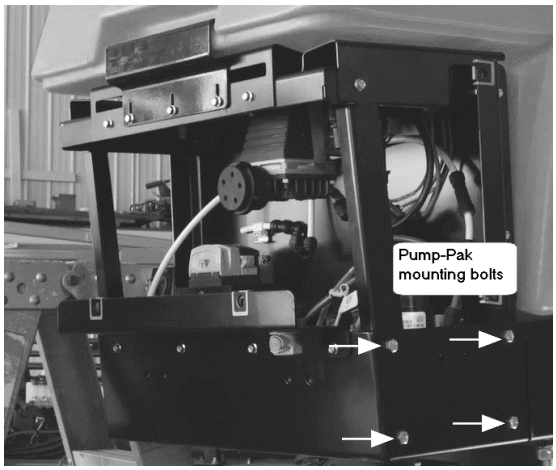


2. Remove the Pump-Pak™ cover by turning the ¼ turn fasteners.

3. Remove the 3 bolts holding the chemical tank retaining bracket. Lift chemical tank off frame.



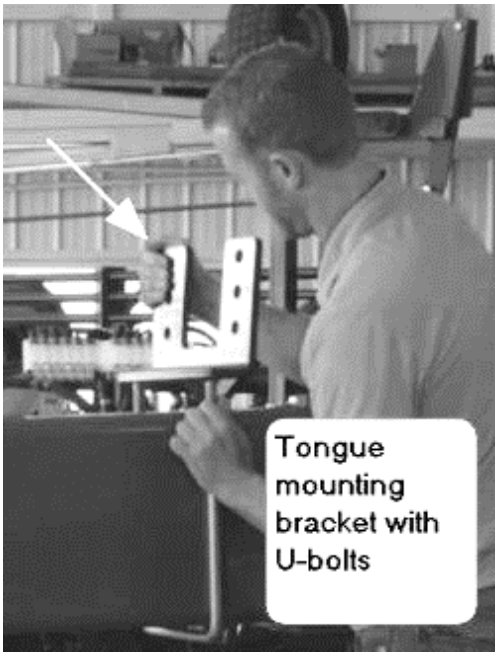
4. Remove the 8 bolts holding the Pump-Pak™ in place (4 each side). Lift the Pump-Pak™ from the tank frame.



Take care to protect loose electrical connections and tubes on the Pump-Pak™. The Pump-Pak™ is delivered with plumbing and electrical connections already made to aid in installation.

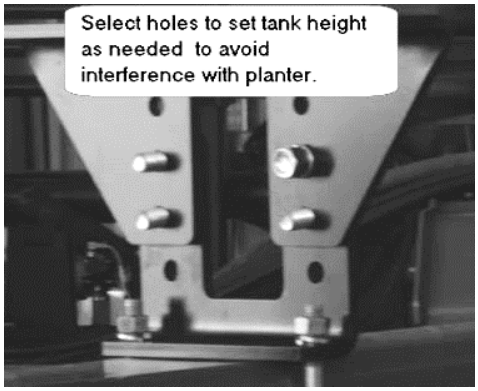
5. Install Tongue Mount Brackets.

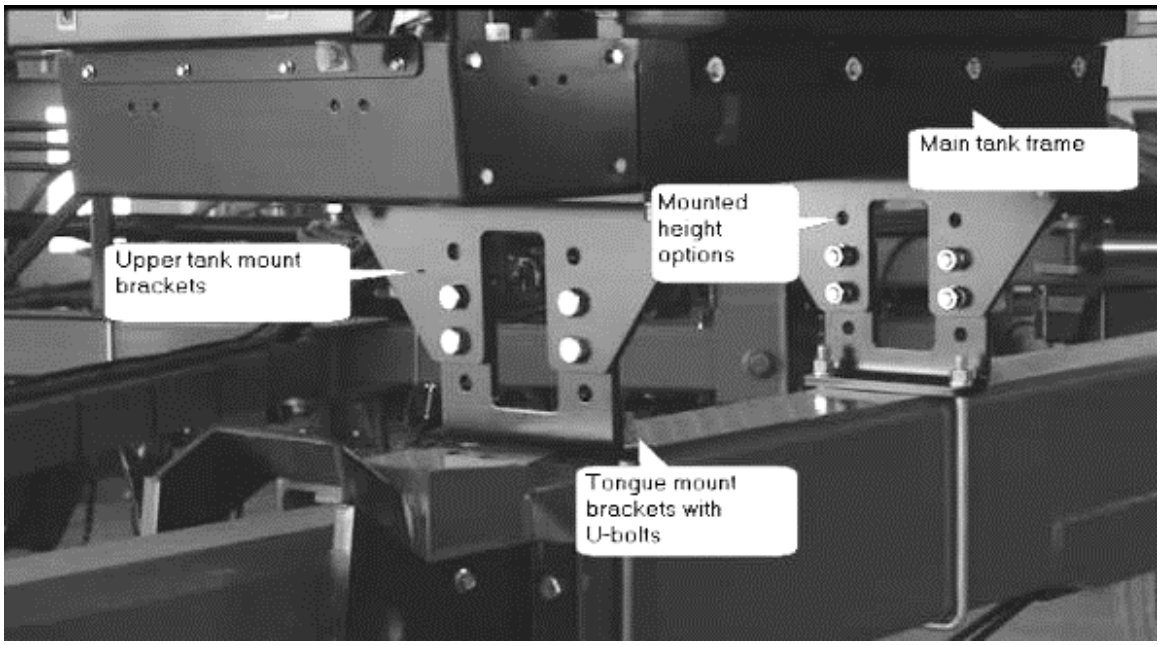
   Place lower brackets on tongue in the desired location, and secure to the tongue with the included U-bolts. Tighten the U-bolts hand tight so the bracket may be slid to accommodate the main tank frame attachment.



6. Attach the upper brackets using the included ¾" nuts and bolts. The bracket is designed to mount the tank at different heights to allow for different amounts of clearance on various planters.

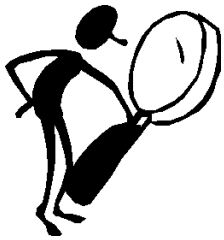
   A tank extension kit p/n 01963 is available if it is necessary to raise the tank assembly higher.





Tank assembly brackets

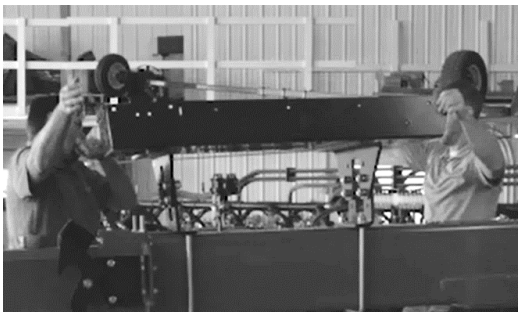
7. Reassemble Tank Module on Mount Brackets



The main tank frame of the 3RIVE 3D®system has 4 sets of mounting holes to accommodate various mounting configurations. When mounting the tank, it is best to use the widest configuration that is available (Hole sets 1 and 4) but to allow for offsetting mounting conflicts hole sets 1 & 3 or 2 & 4 may also be used together.

Never mount the tank frame using hole sets 1 & 2 or 3 & 4.

8. Place the main tank frame on the tongue mount brackets



9. Place the water support frames in the main tank frame.

10. Secure the water support and tank frame to the tongue mount brackets with the supplied ¾" bolts.

11. Tighten all the ¾" bolts securing the tank frame to the tongue mounts.

12. Tighten the U-bolts.

13. Place the Pump-Pak™ in the main tank frame and secure with 3/8" bolts.

14. Place the water and chemical tanks on the tank frame and secure with the tank rails and bracket that were removed in steps 1 & 2.

After the tank assembly is complete on the tongue, **CAREFULLY** fold planter to ensure there is no interference between tank assembly and planter components when the planter is fully folded to transport mode.

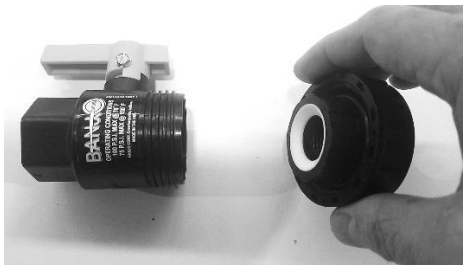
Move tank assembly on tongue as necessary to avoid interference, and re-verify by folding planter.

15. Thread ¾” x ¾” pipe nipple into bottom of tank.

16. Install ¾” x ¾” x ¾” FPT tee on nipple.

17. Install ½” close nipple into valve end that has the large collar.

18. Disassemble ½” FP Union PolyPro shutoff valve to aid further assembly.

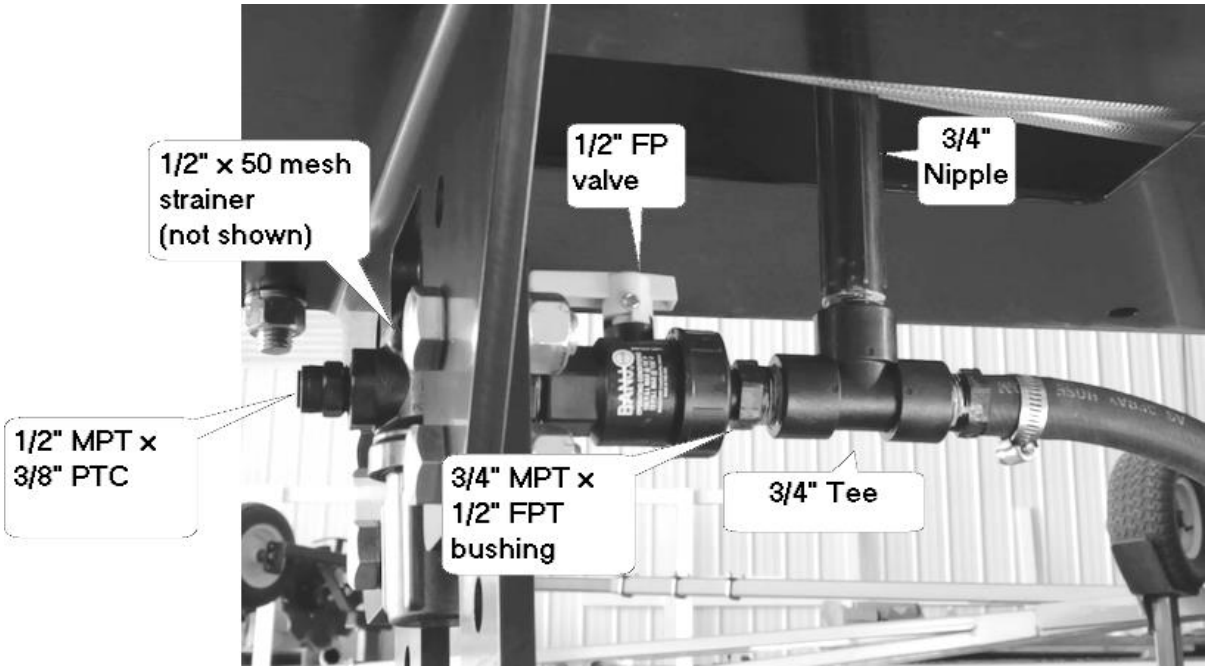


19. Install the valve seat and threaded collar with bushing into the front leg of the tee.

20. Using the ½" x ½" MPT nipple install the 50 mesh water strainer (smaller of the two provided) onto the valve body (part with handle).

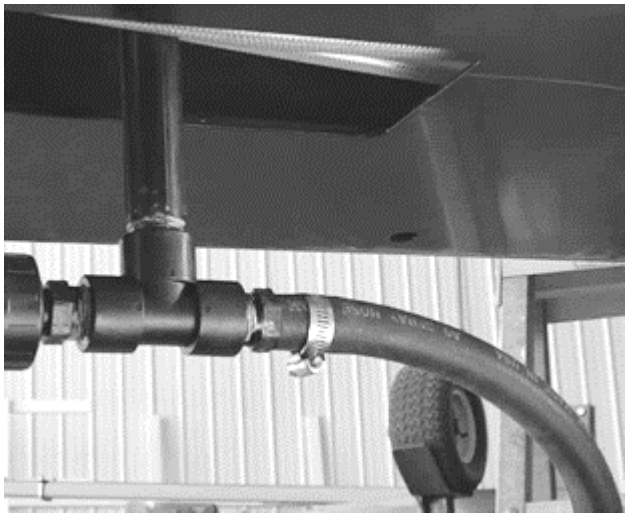
Observe flow direction arrow stamped on strainer body.

21. Install a ½" MPT x 3/8" PTC connector into the strainer outlet.



Tank assembly fittings

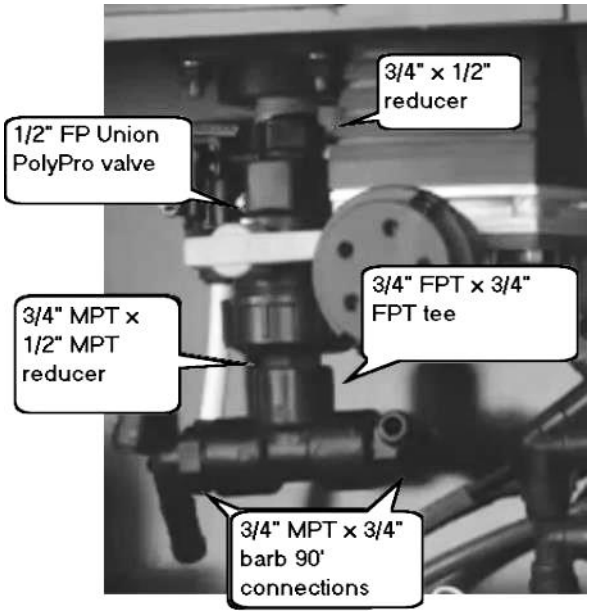
22. On the tee outlet towards the back of the tank assembly connect the ¾" MPT x ¾" hose barb fitting. Attach the ¾" rubber hose and route to back of tank frame. Secure with hose clamp.



23. There are mounts for the rinse valve on each side of the tank frame. Connect the rinse valve to the preferred side with two bolts. Connect to the rubber hose coming from the Tank Tee. Secure with hose clamp.

This valve is used for draining the tank, as a source of clean water for cleaning hands or tools, and can be used as a bottom fill for the water tank.

24. Thread a ¾" x ½" reducer into the bottom of the chemical tank.



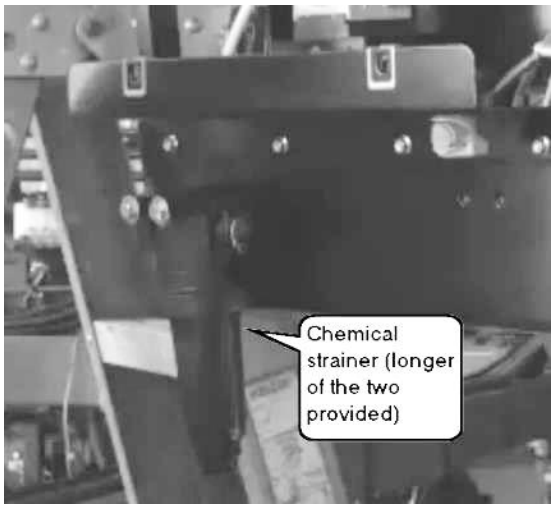
25. Install a ½" FP Union PolyPro valve onto the reducer.

26. Install a ¾" x ½" reducer into the output of the valve.

27. Using a ¾" x ½" reducer install a 1/2" FPT tee onto the reducer off the valve output.

28. Install ¾" hose barb 90^0 fittings into each of the remaining legs of the tee.

29. Mount the chemical strainer (longer of the two provided) onto the front of the Pump-Pak™. Mounting holes are provided on both sides to allow for user preference. Observe flow direction arrow on filter housing. In this example flow is from left to right.



30. Install a ¾" MPT x ¾" hose barb fitting into the strainer inlet. (Observe flow direction arrow on filter housing.)

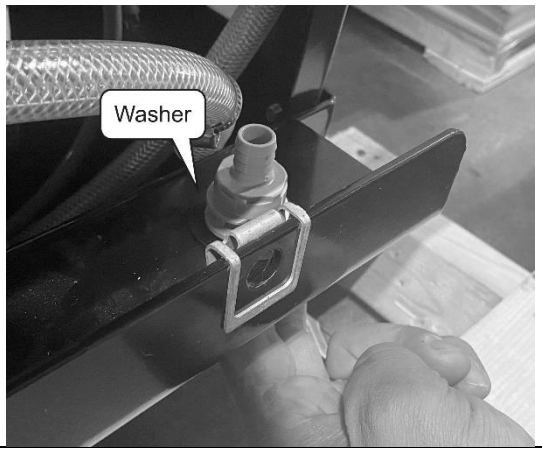
31. Install a ¾" MPT x ½" FPT bushing into the outlet of the chemical strainer.

32. Install a ½" MPT x 3/8" PTC connector into the filter outlet bushing.

33. Run a section of 3/8" braided hose from the left leg of the tee off the bottom of the chemical tank to the inlet fitting of the chemical strainer. Secure with hose clamps.

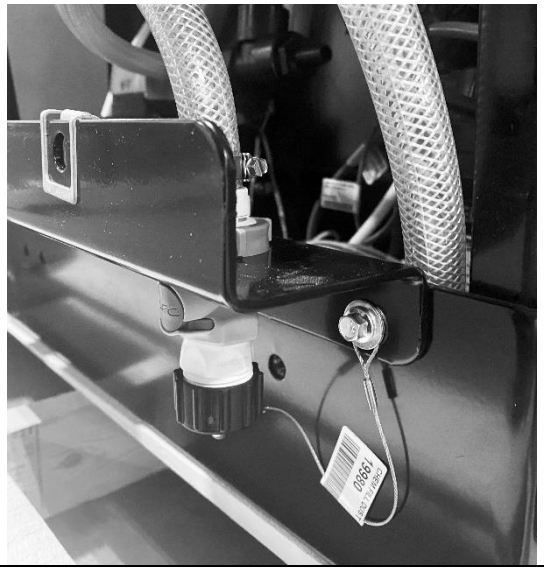
34. Install 16353 quick disconnect.

The strainer and quick fill fitting can be installed on either side of the Pump-Pak™.

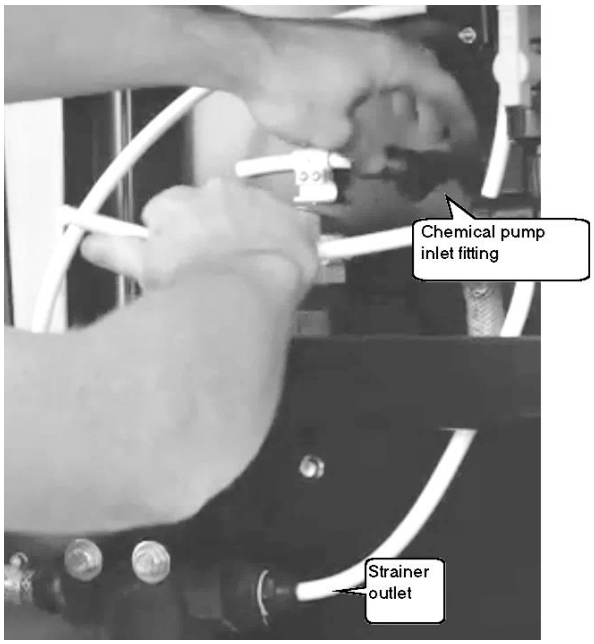


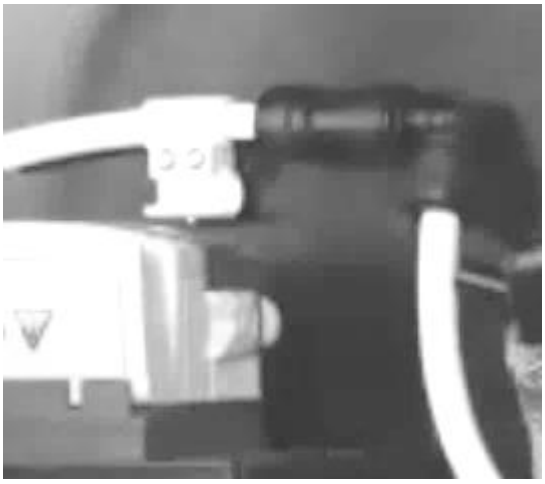
35. Connect the remaining leg of the tee off the bottom of the chemical tank to the bottom fill quick disconnect fitting. Secure with hose clamps.

36. Install dust cover and secure with 3/8” socket.

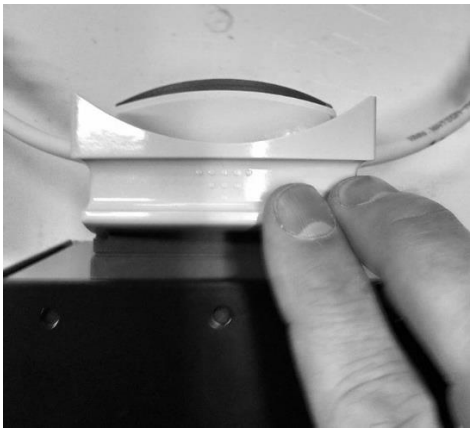


37. Run a piece of white tubing from the strainer outlet to the chemical pump inlet fitting.





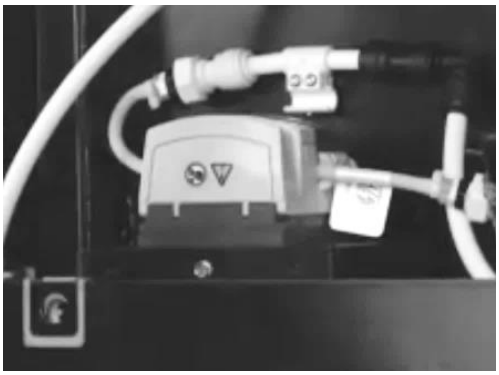
38. Pull down on the front of the pump head to open the tubing jaws.



39. Lay the metering tube into the jaws of the pump. The tube should be approximately centered on rollers.

40. Gently close the jaws by pushing up and forward on the pump head latch making sure the tube is centered in the V notch of the jaw cover.

41. Connect the left side of the metering tube to the length of white tubing that is connected to the chemical pump inlet fitting.

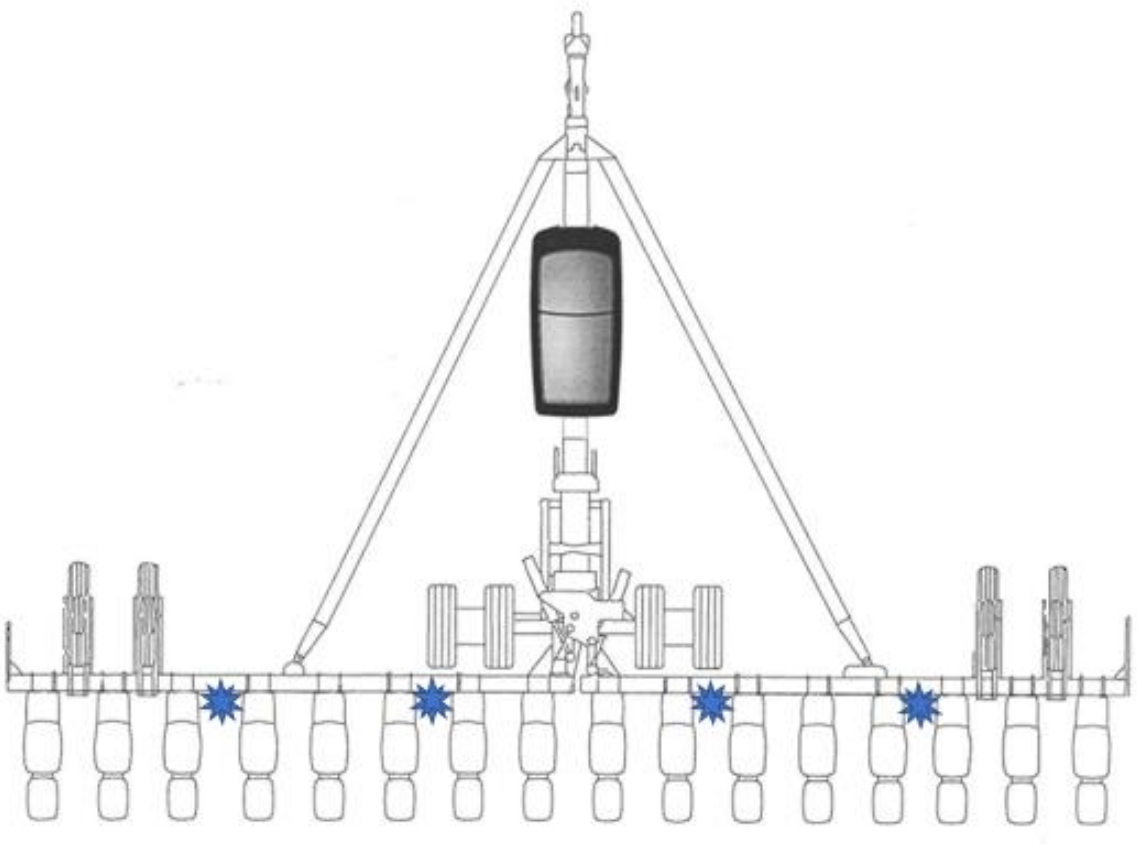


42. Install retaining washers on the inside of the front capture panel.

43. Install front capture panel.

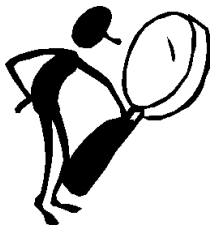
Section Manifold Installation

The ideal location for the Section Manifolds are in the center of their section. With folding and other items on the planter this is not always possible. Install the Section Manifold in a location that will keep the tubing to the row valves as short as possible. It is not advised to exceed 20' of tubing from top of manifold to the row valve.



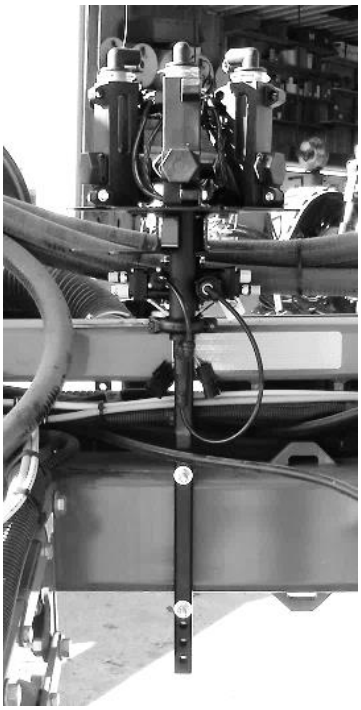
Typical Manifold Locations

1. Attach manifolds to bar with U-bolts. They are typically mounted on the backside of the bar (outside of the bar when folded) to minimize interference).



All section manifolds will need to be installed at the same height. You may need to drill new holes or create your own bracket to allow for unimpeded planter folding motion.

We recommend mounting the section manifolds on one side of the planter first, so that you can check that everything folds correctly before mounting on the other side.

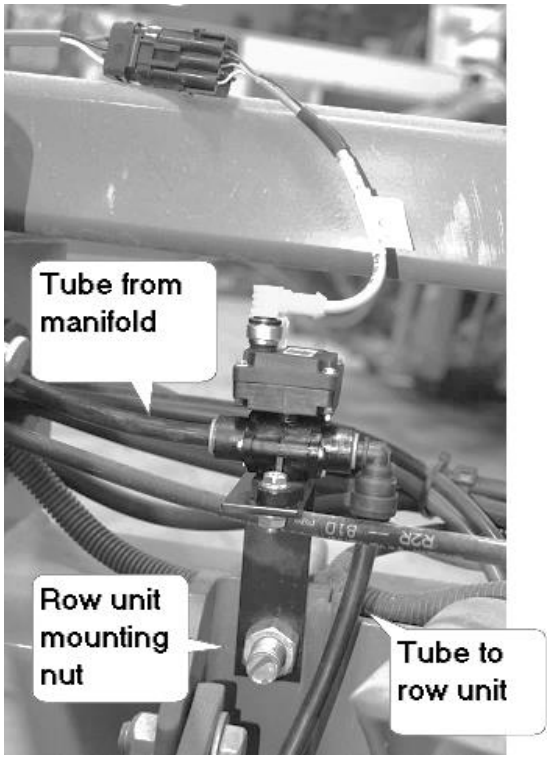


Install Row Unit Components

Install Row Shutoff Valves

1 Mount the row valve assemblies to the U-bolts used to mount the planter row unit.

Flow can run either direction through the valve. Mount the valve to minimize interference with row-mounted equipment.



Install In-Furrow delivery kit

1. Install chosen furrow delivery attachment per the manufacturer's recommendations.

2. For straight tube applications (IE Keeton Seed Firmer):
    a. Insert the included stainless-steel tube into the end of the seed firmer leaving a minimum of ½" exposed past the end of the firmer.
    b. Cut the ¼" supply tube 10 - 18 inches from the seed firmer as necessary to provide enough length to bring connection above row unit.

3. For the bent tube applications (IE John Deere Fertilizer Bracket or Rebounder:
    c. Install the bent SS tube vertically and secure with the bend facing backwards as shown
    d. Route the ¼" Tubing to an accessible location above the row unit.

4. Install the 3/8 x ¼ Push to Connect Coupler.

Install Tubing Between Row Shutoff Valve and In-Furrow Tube

1. Determine the row that will require the longest length of tubing to reach from the valve to the coupler from the furrow attachment.

This tubing must be the same length for all row units. This length can change based on which side of the row unit a valve was mounted. Make sure the length picked will work before cutting all the hose lengths

2. Route this longest tube leaving enough length to account for motion of the row unit

3. Remove this tube and measure.

4. Cut the remaining tubes, one for each row, all the same length.

5. Install the 3/8” tubing from the row valve to the coupler leading to the in-furrow delivery device.

Install Tubing from Manifolds to Row Units

1. Determine the row that will require the longest length of tubing to reach from the top of the SafeGuard™ Sensor on the section manifold to the row shutoff valve.

2. Route this longest tube leaving enough length to account for folding and flexing of the planter.

Ensure this longest tube will not bind, stretch or get pinched when the planter is folded to the transport position before cutting remaining tubing.

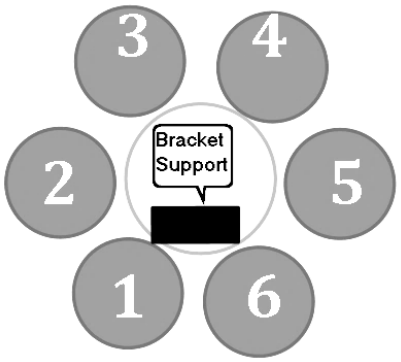
3. Remove this tube and measure.

4. Cut the remaining tubes, one for each row, to this length.

5. The SafeGuard™ blockage sensors are wired in a daisy-chain and are connected in a clockwise fashion. The 1st sensor adjacent to the mounting bracket support is the lowest number sensor and row for any given section.

   Install the tubing from the row shutoff valve to the corresponding SafeGuard™ blockage sensor to aid in troubleshooting or blockage notification.

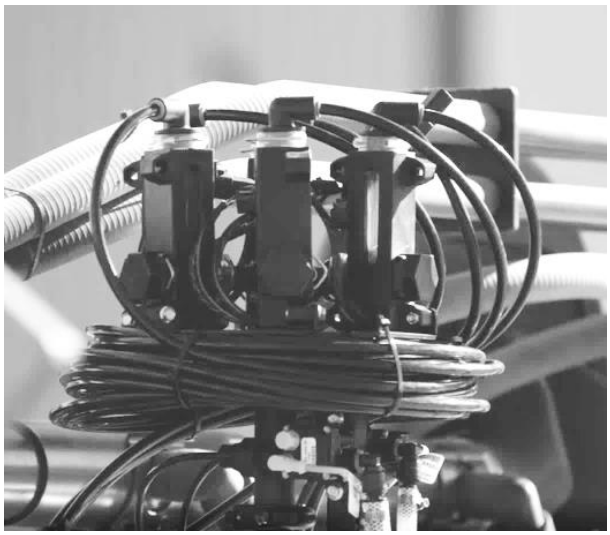
   Coil excess tubing around the manifold on the coiling brackets and secure with cable ties.



Always route tubing starting at the shutoff valve and working your way back to the manifold.

6. Installation will be easier if tubes are not coiled tightly on the manifold bracket.

Keep bend in tubing smooth with larger radiuses to avoid kinks that will affect foam flow.



After all the tubing is routed, **CAREFULLY** fold planter to ensure there is no binding, pinching or other interference between tubing and planter components when the planter is fully folded to transport mode.

Install Air and Solution plumbing

Tank Assembly and Section Manifolds must be installed prior to this step

Install Solution lines

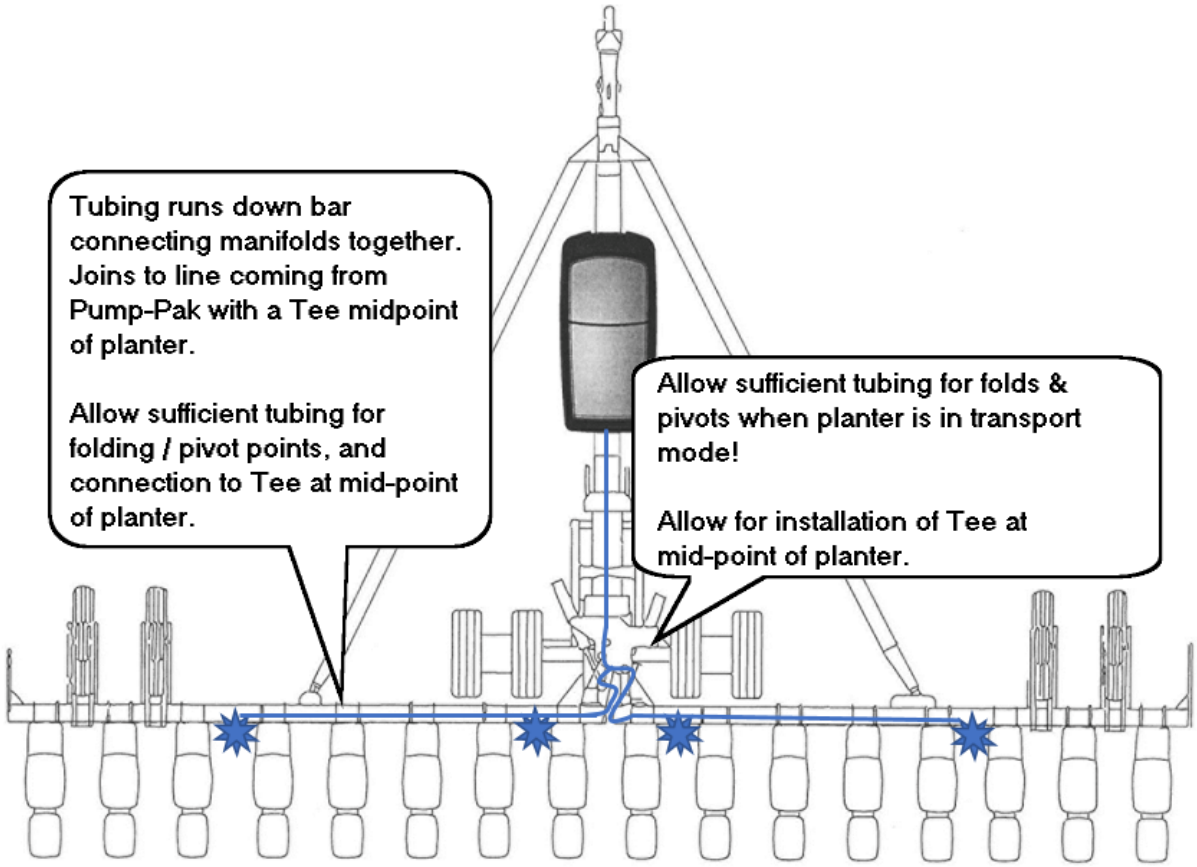
1. Connect 3/8" braided line to the outlet on the flowmeter located in the Pump-Pak™ and route this line to the center of the planter.

2. Using the included hose barb tees and clamps; place a tee at the center of the planter for the solution lines (3/8" braided line). Route hose from center of the planter to the section manifolds.

Allow sufficient tubing to accommodate planter folding. See illustration below.

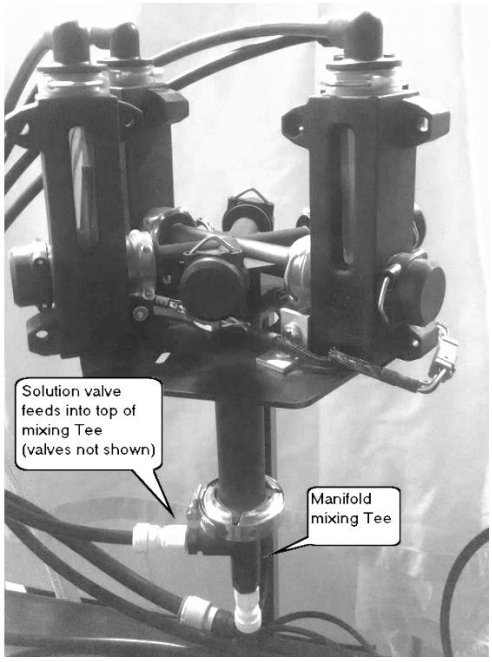
3. Continue extending the solution lines, placing tees to supply each section. The solution line ends at section #1 on the left and the highest section number on the right.

Braided hoses do not have to be cut to the same length.



4. Connect the solution lines to the manifold valves (the shutoff valve for the solution solution feeds into the top of the mixing Tees).

   Manifolds on the first and last section have the solution and air lines connected directly to the section valves with hose barb / Push to Connect fittings. The other manifolds have a line teed off from the main supply line with supplied hose barb tees.



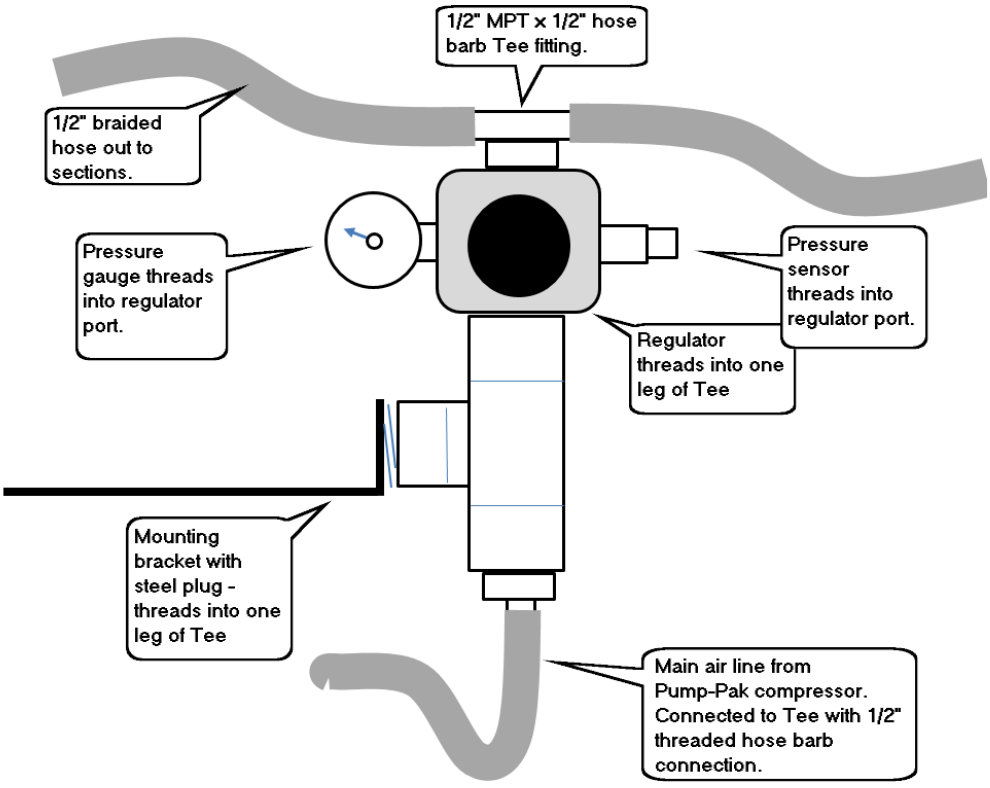
Install Air Lines

1. Find an accessible location near the center of the planter to install the air pressure regulator.

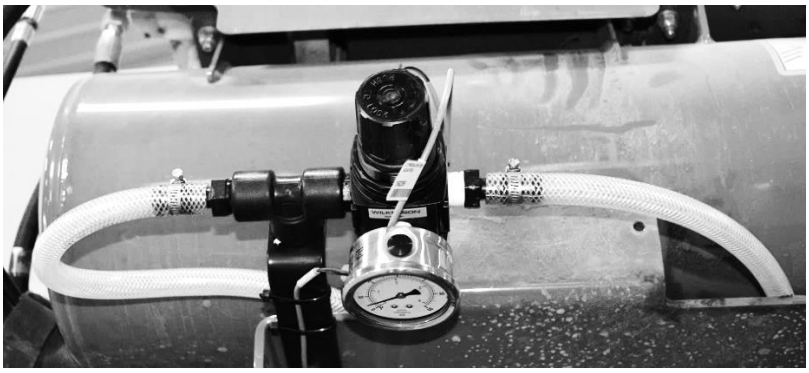
   The diagram below shows a typical installation with the regulator mounted at the rear of the planter, and the air lines teed off the regulator going out to the sections.

The regulator / pressure gauge and pressure sensor can be mounted in various locations; however, it must be mounted in the main air supply line before the tee branches off to the sections. The regulator will need to be adjusted during the initial startup of the system, but should not require a lot of attention once the system is set and running.

If the regulator is **not** installed near the center of the planter, install the included hose barb fitting and route the line to the center of the planter with the 3/8" liquid line and insert the tee fitting there.



Typical install – Air regulator with tee at center of planter



Example of air regulator mounted at rear of planter with line running back to pivot center. Tee is mounted closer to the actual pivot point.

2. Connect the included ½" braided line to the outlet on the air compressor relief valve and route to the inlet of the Air Pressure Regulator.

3. Using the included hose barb tees and clamps; place a tee at the center of the planter for the air lines (1/2" braided line). Route hose from center of the planter to the section manifolds.

Allow sufficient tubing to accommodate planter folding.

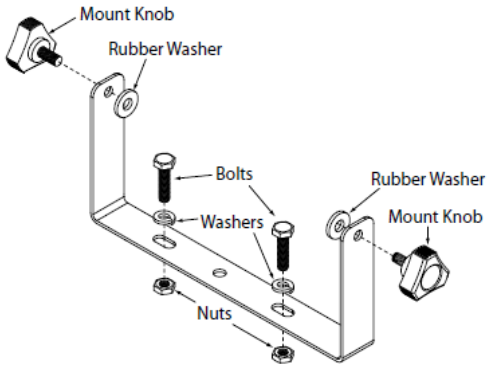
1. Continue extending the solution lines, placing tees to supply each section. The solution line ends at section #1 on the left and the highest section number on the right.

3RIVE 3D® Console system installation

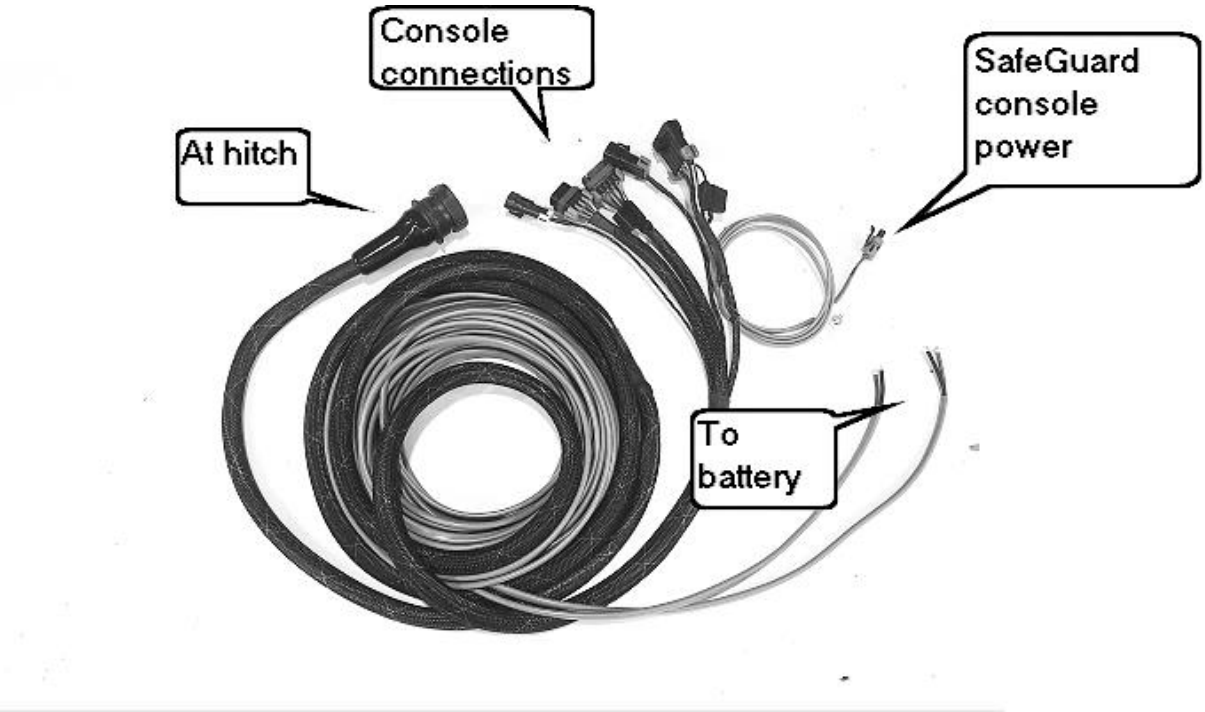
Install 3RIVE 3D® Console

1. Select a mounting location which is practical and convenient. It should be easy to reach and highly visible to the operator. DO NOT INSTALL IN A POSITION THAT OBSTRUCTS THE VIEW OF THE ROAD OR WORK AREA. Whenever possible, avoid locations that expose the console to direct sunlight, high temperature, strong chemicals or rain.

2. Place the mounting bracket in the selected location, mark holes, drill ¼" (7mm) holes and mount bracket with bolts, lock washers and nuts provided. (Use self-tapping screws if not practical to use bolts.) Position console to proper viewing angle and tighten the knobs securely.



Install 3RIVE 3D® Tractor Harness (Console to Hitch)



1. Position round connector at the desired hitch location. Secure with cable ties if needed.

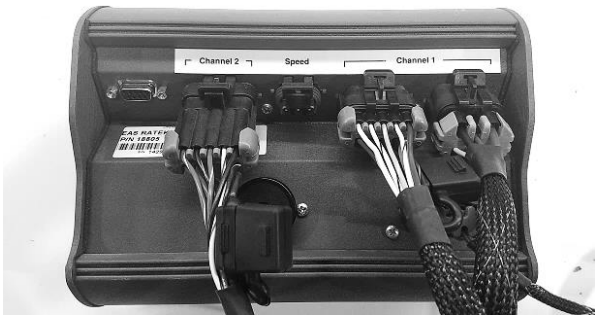
2. Route power leads to battery. Trim any excess length from the power leads and crimp the fuse and ring terminals to the power leads. Connect the power leads to the battery.

Fuses MUST be installed to protect both the 3RIVE 3D® system AND the tractor in the event of an overcurrent fault.

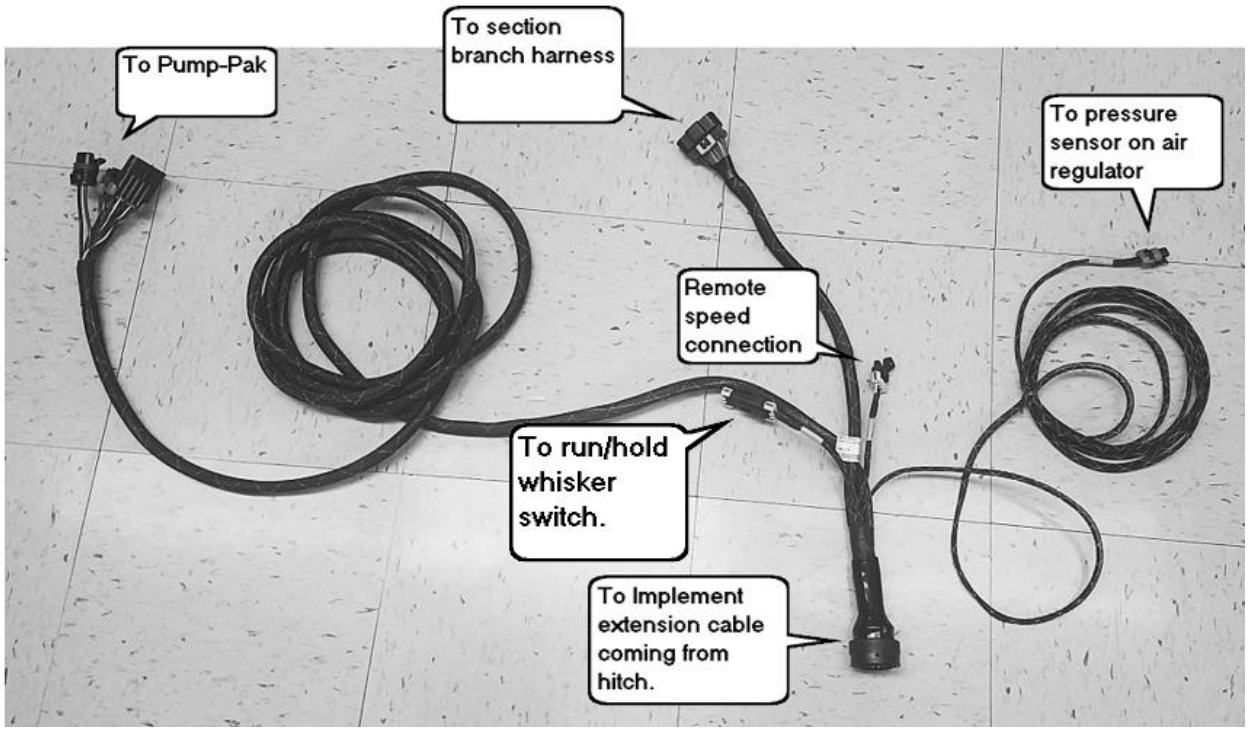
Red - Positive Black – Ground

Take care to route wiring to prevent chafing or other damage during equipment operation.

3. Connect the console connections to the 3RIVE 3D® Dual controller.



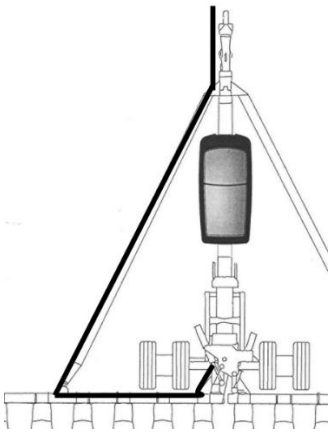
Install Planter Harnessing – Console System



Implement Harness

1. Connect 29-pin extension cable to tractor harness at hitch.

2. Run extension cable down outside planter beam, and across bar to mid-point of planter.

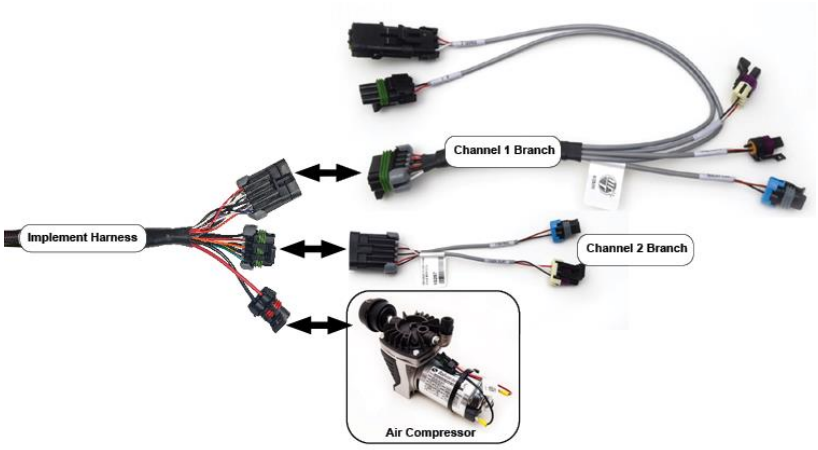


Make sure to route cable to allow for planter folding and unfolding.

3. Connect the Implement harness to the extension cable mid-point of planter.

4. Run the long Implement branch up to the Pump-Pak™.

5. Connect the harness to the Pump-Pak™ connections. Connections are labeled, and are gender-specific.



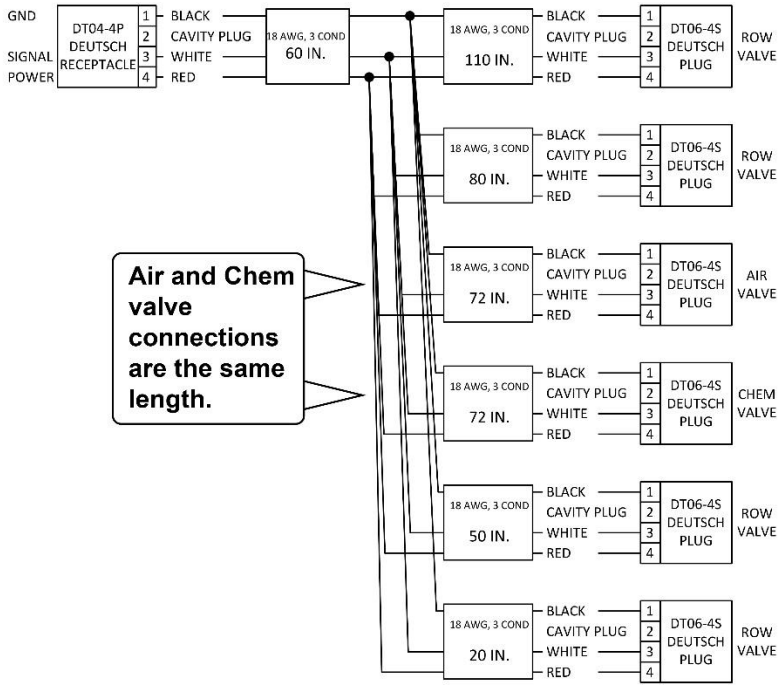
6. Run the pressure sensor branch to the air regulator / pressure sensor assembly. Connect to pressure sensor.

7. Lay out the ball valve splitter harnessing. This is the harness that connects to each row shutoff valve and the air and solution valves on the section manifold.

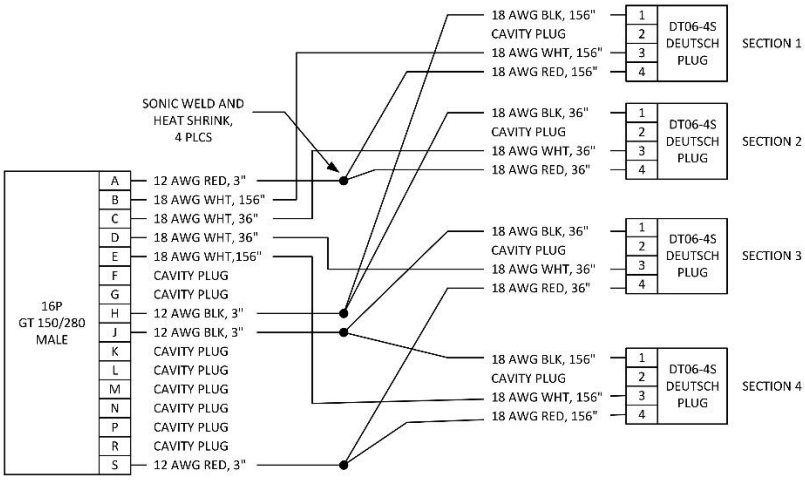
Make sure to route cable to allow for planter folding and unfolding.

The connections for the manifold-mounted air and solution valves are the same length. It is intended those are connected to the air and solutions valves, but they can be connected to any of the row valves to allow for routing.

It works best to connect the shortest row connection first, and temporarily secure it in position with a cable tie. Then start coiling and securing excess wiring as you connect the longer connections.



8. Connect the rectangle 16-pin connector on the section branch harness to the rectangle connector on the implement harness.



9. Route the section branch harness section cables to the corresponding section ball valve splitter harnesses.

Make sure to route cable to allow for planter folding and unfolding.

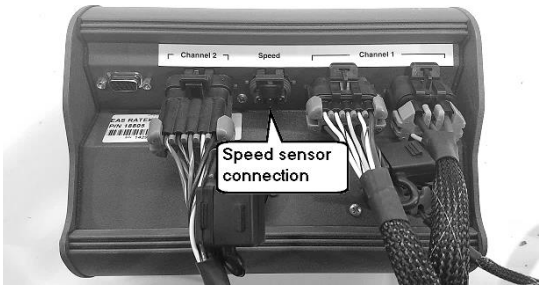
10. Connect the implement harness run/hold connection to the implement whisker switch with extension cable. The switch has two connections; 1 marked SafeGuard™, and 1 marked Other. Connect to "Other".

Install GPS Speed Sensor

1. Mount the receiver using the integral magnet or the included self-adhesive fastener tape. If using the fastener tape - clean the mounting location, remove the plastic backing, and press firmly to the surface. Mount the receiver outside the cab where it has a clear view of the sky.

2. Route the 10-foot cable from the receiver into the cab. Avoid sharp edges or heat sources. The rectangular module is roughly the same size as the connector and will fit through the same opening.

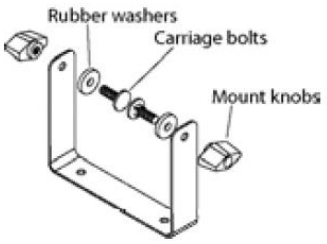
3. Connect the cable from the Astro to the connector labeled SPEED on your console.



SafeGuard™ Blockage Monitor – Console System Installation

1. Place the mounting bracket in selected location, mark holes, drill 1/4" (7mm) holes and mount bracket with hardware provided.

2. Put rubber washers on carriage bolts and put the bolts through the bracket holes from the inside out. Loosely attach the mount knobs onto the bolts. Place console over carriage bolt heads and tighten knobs to secure the console.



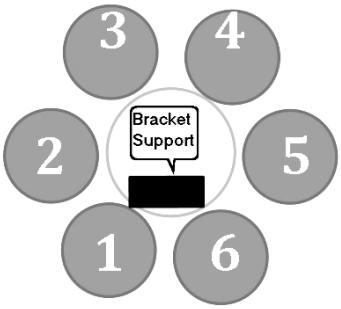
3. Connect the power cable to a 12 VDC source. There is a connection near the console on the tractor harness for this purpose. It can also be connected to the battery or other power point.

4. Route the **Console to Hitch** cable from the console to the tractor hitch.

5. Route extension cables from the hitch to the section 1 manifold and connect to row #1 sensor.

Make sure to route cable to allow for planter folding and unfolding.

The SafeGuard™ blockage sensors are wired in a daisy-chain and are connected in a clockwise fashion. The 1st sensor adjacent to the mounting bracket support is the lowest number sensor and row for any given section.

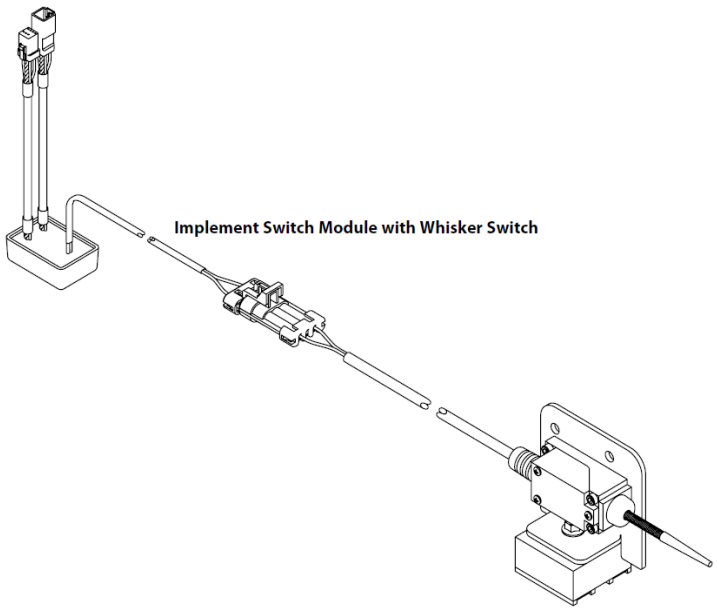


6. Connect remaining section manifolds together with extension cables.

Make sure to route cable to allow for planter folding and unfolding.

7. Place a terminator plug on the output of the last sensor on the last section.

8. Install whisker implement switch.



9. The implement switch module can be installed at any position on the SafeGuard™ sensor daisy chain. If it is the last item on the daisy chain the termination cap must be installed on the open connector.

   The Implement switch has a magnetic base which allows it to be positioned on the implement as needed.

   The coiled spring actuator will activate when moved in any direction.

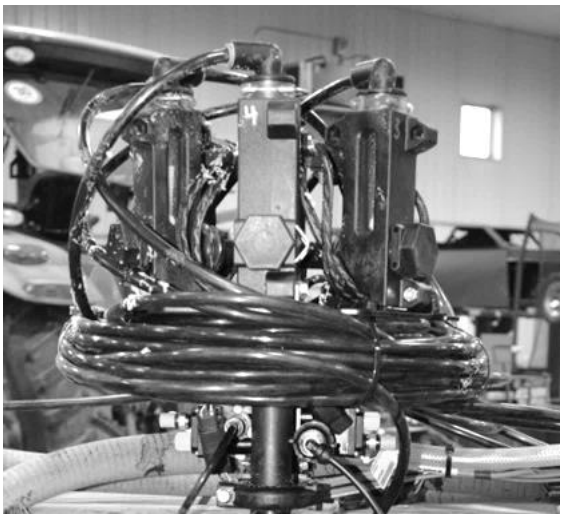
   There are two three-pin Metri-Pack connectors on the whisker implement switch. The SafeGuard™ implement switch module is connected to the connector labeled **SafeGuard™**. The switch is connected between pins A & C. When the switch is closed the audible alarm is on. When the switch is open the audible alarm is muted and HOLD is displayed. The display still shows blockage and error indications when HOLD is displayed.

Final Wiring and Plumbing Routing – Final Checks

1. It is very important to neatly route and adequately secure both the plumbing lines and wiring.

2. Air and solution lines, section wiring and SafeGuard™ system wiring can be bundled together, simplifying troubleshooting if needed at a future date.

3. Tubing must be neatly coiled and secured around manifold brackets.



4. Make sure wiring and tubing running down tongue to tank assembly is neatly secured.

5.  Once again check that tubing or wiring is not pinched, stretched, or chaffed when the planter is folded or unfolded. Existing hydraulic, vacuum, and other wiring can slide back and forth during folding.

Console System Checkout

The 3RIVE 3D® system must be completely installed prior to performing a system checkout.

A system checkout consists of running ***rinse*** and ***charge*** routines which will check the functionality of all system components.

During the SafeGuard™ system power-up sequence the SafeGuard™ system counts the blockage sensors it sees on the data line. Verify the number detected = the number of sensors installed. This example shows 48 sensors detected.

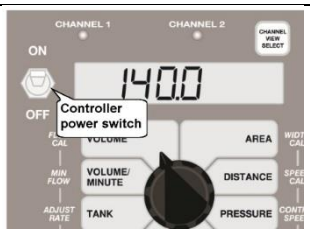
In rinse mode, with the section switches ON and the system in HOLD, the pumps are turned off but the sections remain ON which allows pressure to bleed off the system. When the system is placed in RUN the rinse mode continues with channel 1 pumping water through the system.

1. Make sure water tank has adequate clean water, at least 5 gallons.

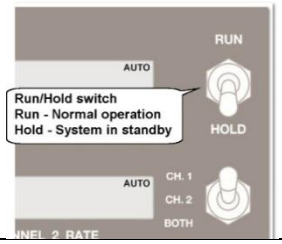
2. Mix at least one gallon of a solution of water and dishwashing soap (3 parts water – 1 part liquid dish soap) and pour in chemical tank.

3.  Tractor must be running during test.

   Turn 3RIVE 3D® Dual and SafeGuard™ consoles ON.



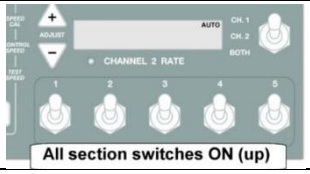
4. Switch the Run/Hold switch to HOLD.



5. Turn the knob to SPEED

6. Press and hold the RESET button located below the knob for 5 seconds. The console will beep three times and RINSE will be displayed in the left window.

7. Turn all section switches ON.



All section switches ON (up)

8. Switch the Run/Hold switch to RUN.

   - The air compressor(s) will start
   - The Channel 1 solution pump will begin pumping water through the system.

   The Channel 1 solution pump will run at full speed.

If the system is completely empty (dry), it may take cycling the run/hold switch several times which will stop and start the pump, forcing air out of the system.

9. Begin a walk-around visual inspection:

   - Check for leaks
   - Water can be observed flowing through braided tubing out to manifolds
   - After a short delay water can be observed bubbling up in SafeGuard™ sensor chambers
   - Visually verify the presence of water and air being supplied to each section manifold.
   - Verify each row unit has water and air spitting out of in-furrow tube.
   - Turn off sections one at a time with the section switches on the 3RIVE 3D® Dual controller console to verify sections turn off and on in response to controller section switches.
   - SafeGuard™ console may indicate all sensors are blocked.

10. After preliminary system check is complete put the system in HOLD.

11. Press the RESET button to exit the rinse mode.

12. Press and hold the  button located below the knob for 5 seconds. The console will beep three times and display CHARGE in the left display window.

13. Place the system in RUN mode.

14. The chemical pump, solution pump and air compressor (s) will begin running.

    After a few minutes foam will be seen building in the blockage monitor row units.

    Foam will <u>not</u> come out of each row unit equally until the system is fully charged with foam. The foam creates back pressure which evens out row-to-row distribution.

    Foam will typically begin flowing from the two middle sections first, and then foam will develop in the outer sections last.

    In the CHARGE mode the system runs in AUTO mode at a simulated ground speed of 6 mph at the rate programmed into the 3RIVE 3D® controller. Those target rates are displayed on the right side channel displays

15. After foam is seen forming in the SafeGuard™ sensor chambers begin another walk-around visual inspection:

    - Check for leaks
    - Visually verify the presence of foam forming in each section manifold.
    - Verify each row unit has foam spitting out of in-furrow tube.
    - Turn off sections one at a time with the section switches on the 3RIVE 3D® Dual control ler console.
    - After dense foam is coming out of each row unit the SafeGuard™ console shows all good.

16. After operation is verified place the system in HOLD and press the + button to exit the charge mode.

17. System rinse following checkout –

    Press and hold the - button located below the knob for 5 seconds. The console will beep three times and RINSE will be displayed in the left window.

18. Run rinse routine until all SafeGuard™ sensor chambers are clear of foam. Add water to the water tank as needed.

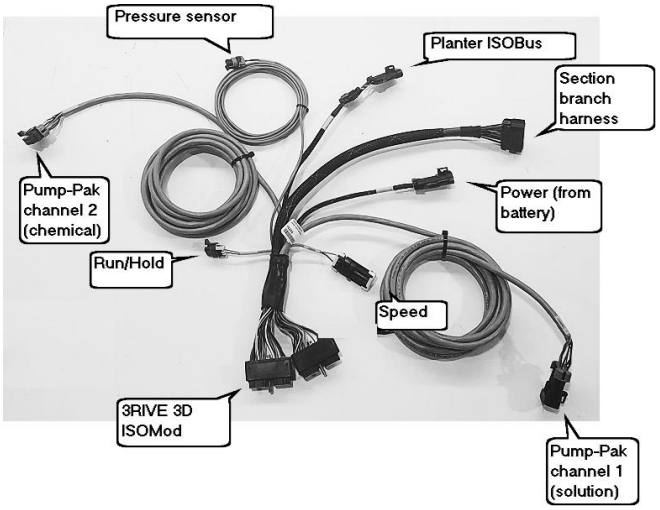
19. Drain soap and water mixture out of chemical tank and chemical filter; rinse with clean water.

20. Components tested:

- Solution pump
- Chemical pump
- Air compressor
- Fittings leak checked
- Harnessing verified out to each row
- Row shutoff valves
- Manifold-mounted valves
- SafeGuard™ sensors
- SafeGuard™ console
- 3RIVE 3D® Dual console

3RIVE 3D® ISOmod™ system installation

Install 3RIVE 3D® ISOmod™



1. Install ISOBus tap cable which is connected to the planter ISOBus connection, near center of planter if available. The ISOBus connection will typically have a rectangle termination connected as shown. The SafeGuard™ tap cable can be connected to a branch of this cable. Ensure terminator is re-installed on open branch of cable.

2. Connect 3RIVE 3D® ISOmod™ harness to Tap cable.

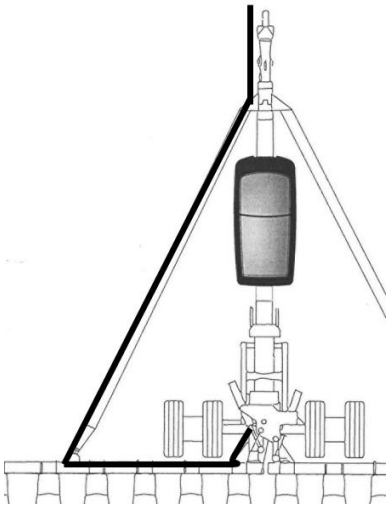
3RIVE 3D® and SafeGuard™ ISOmods™ do not have to be installed at the same location; however, it will make connecting to the planter ISOmod™ harness much easier. It is also recommended to install the ISOmods™ close to the center of the planter.

3. Connect ISOmod™ to harness with two rectangle connectors.

4. Secure ISOmod™ to planter with magnet mounting bar kit or mounting holes molded into module.

5. Run power cable from ISOmod™ power connection back to the hitch (connection) and to the tractor battery.

Make sure to route power cable to allow for planter folding and unfolding.



6. Route power leads to battery. Trim any excess length from the power leads and crimp the fuse and ring terminals to the power leads. Connect the power leads to the battery.

Fuses MUST be installed to protect both the 3RIVE 3D® system AND the tractor in the event of an overcurrent fault.

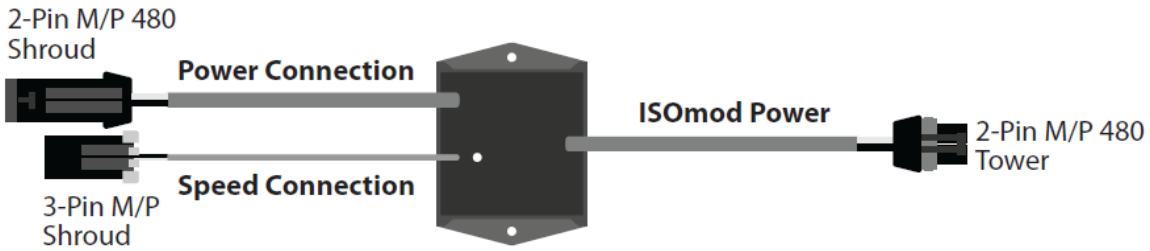
Red - Positive Black - Ground

7. Install Power Module between the power cable and the power connection on the ISOmod™ harness (NOT the connection going to the air compressor).

Connect the 3-pin Metri-Pack connector to the **Speed** connection on the ISOmod™ harness.

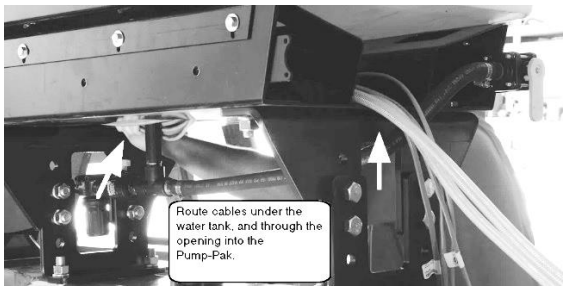
This module controls the supply of electricity to the ISOmod™ preventing battery drain when not in use. When vehicle voltage is present at the Speed Connection, a relay turns on main power to the ISOmod™.

A green LED on the potted enclosure will light when power is turned on to the ISOmod™.



Power Module

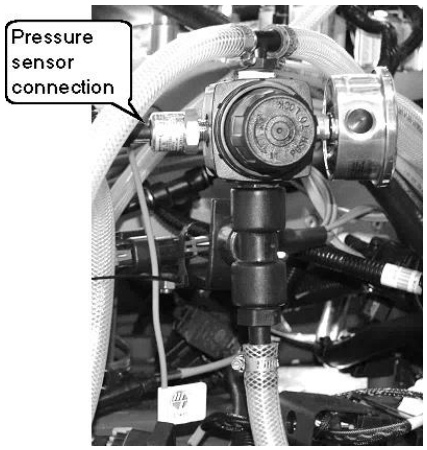
8. Route the Pump-Pak™ channel 1 and 2 cables up the tongue to the Pump-Pak™.



9. Connect the channel 1 and 2 cables to the ISOmod™ harness and connect to their respective connections within the Pump-Pak™.

10. Connect 16-pin ISOmod™ connection to the section branch harness.

11. Connect pressure sensor cable to air regulator/pressure sensor assembly.



12. Using the magnetic mount place the whisker implement switch where it will be deflected when the planter is lowered. This can be on a row unit or wheel assembly.

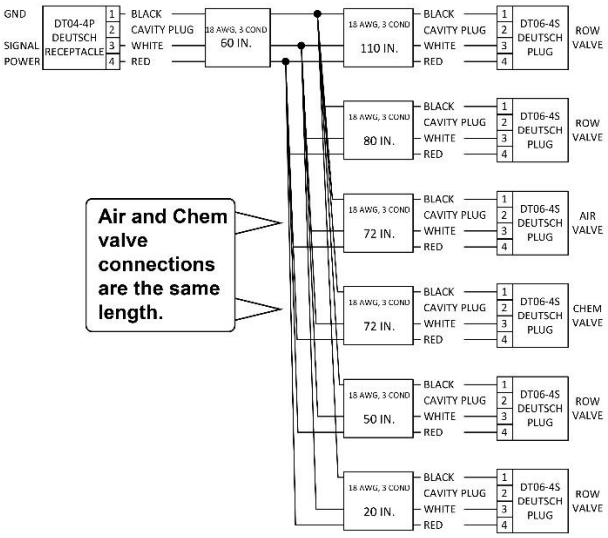
13. Run extensions as needed to connect whisker switch to the RUN/HOLD connection on the ISOmod™ harness.

11. Lay out the ball valve splitter harnessing. This is the harness that connects to each row shutoff valve and the air and solution valves on the section manifold.

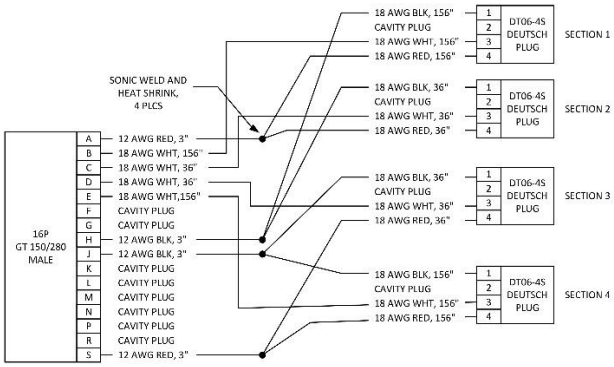
Make sure to route cable to allow for planter folding and unfolding.

The connections for the manifold-mounted air and solution valves are the same length. It is intended those are connected to the air and solutions valves, but they can be connected to any of the row valves to simplify routing.

It works best to connect the shortest row connection first, and temporarily secure it in position with a cable tie. Then start coiling and securing excess wiring as you connect the longer connections.



12. Connect the rectangle 16-pin connector on the section branch harness to the rectangle connector on the implement harness.



13. Route the section branch harness section cables to the corresponding section ball valve splitter harnesses.

Make sure to route cable to allow for planter folding and unfolding.

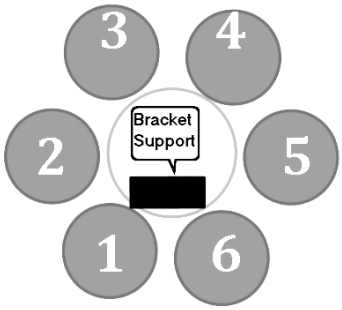
SafeGuard™ Blockage Monitor – ISOmod™ System Installation

1. Connect SafeGuard™ ISOmod™ Tap cable to planter ISOBus connection, near center of planter if available, then connect Tap cable to SafeGuard™ ISOmod™.

2. Secure SafeGuard™ ISOmod™ to planter with magnet mounting bar kit or mounting holes molded into module.

3RIVE 3D® and SafeGuard™ ISOmods™ do not have to be installed at the same location; however, it will make connecting to the planter ISOmod™ harness much easier. It is also recommended to install the ISOmods™ close to the center of the planter.

The SafeGuard™ blockage sensors are wired in a daisy-chain and are connected in a clockwise fashion. The 1st sensor adjacent to the mounting bracket support is the lowest number sensor and row for any given section.



3. Connect remaining section manifolds together with extension cables.

Make sure to route cable to allow for planter folding and unfolding.

4. Place a terminator plug on the output of the last sensor on the last section.

Final Wiring and Plumbing Routing – Final Checks

1. It is very important to neatly route and adequately secure both the plumbing lines and wiring.

2. Air and solution lines, section wiring and SafeGuard™ system wiring can be bundled together, simplifying troubleshooting if needed at a future date.

3. Tubing must be neatly coiled and secured around manifold brackets.

4. Make sure wiring and tubing running down tongue to tank assembly is neatly secured.

5. 

Once again check that tubing or wiring is not pinched, stretched, or chaffed when the planter is folded or unfolded. Existing hydraulic, vacuum, and other wiring can slide back and forth during folding.

ISOmod™ System Checkout

The 3RIVE 3D® system must be completely installed prior to performing a system checkout.

A system checkout consists of running ***rinse*** and ***charge*** routines which will check the functionality of all system components.

Make sure water tank has at least 5 gallons of clean water.

Mix at least one gallon of a solution of water and dishwashing soap (3 parts water – 1 part liquid dish soap) and pour in chemical tank.

Run a RINSE routine to purge the system of air and fill the system with clean water.

During the rinse routine perform a walk-around inspection:

- Check for leaks
- Water can be observed flowing through braided tubing out to manifolds
- After a short delay water can be observed bubbling up in SafeGuard™ sensor chambers
- Visually verify the presence of water and air being supplied to each section manifold.
- Verify each row unit has water and air spitting out of in-furrow tube.
- Turn off sections one at a time with the section buttons at the top of the RINSE screen to verify sections turn off and on in response to controller section switches.

Rinse routine excerpt from the owner's manual (see owner's manual for complete text):

The rinse routine opens the section valves and runs the solution pump at full capacity. This flushes the entire system with clean water from pump inlet through the row units. Rinse the system whenever it won't be used again for several hours, including overnight. This prevents plugging of system components with chemical residue. Once started, the rinse routine will run until cancelled by the operator, a NO FLOW alarm that lasts longer than 15 seconds, or the Rinse Time expires. The Rinse Time can be adjusted by pressing the number and entering a new value before entering the Rinse routine.

Before starting Rinse Routine, make sure at least 3 gallons of water remain in the water tank.

Procedure:

1. Enter Charge/Rinse from Configurations screen by pressing the Charge/Rinse softkey.

2. Enter the Rinse routine by pressing the Rinse softkey.

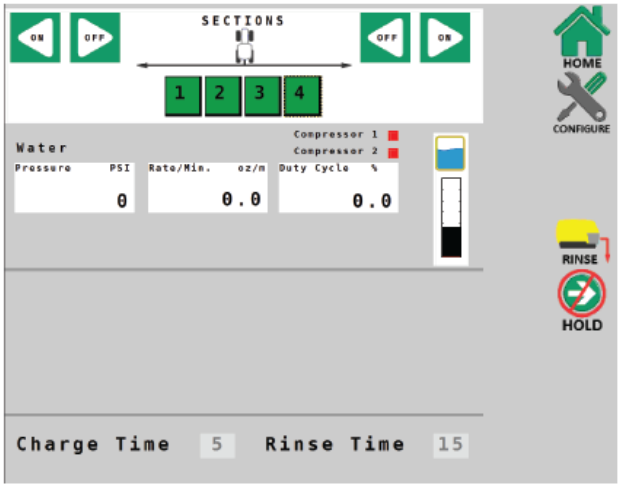
3. Begin the Rinse routine by pressing the HOLD softkey.

The system will pump clean water through the system. The rinse routine should run until all foam is dissolved, and water flows from each row. During the Rinse Routine, the SafeGuard Blockage Monitor will show blockages, due to the difference in density between water and foam.

4. Stop the Rinse routine by pressing the RUN softkey again.

5. Exit the Rinse routine by pressing the HOME softkey.

Rinse Screen



Perform a CHARGE routine to verify system operation.

During the CHARGE routine the chemical pump, solution pump and air compressor (s) will begin running.

After a few minutes foam will be seen building in the blockage monitor row units.

Foam will not come out of each row unit equally until the system is fully charged with foam. The foam creates back pressure which evens out row-to-row distribution.

Foam will typically begin flowing from the two middle sections first, and then foam will develop in the outer sections last.

In the CHARGE mode the system runs in AUTO mode at a simulated ground speed of 6 mph at the rates programmed into the 3RIVE 3D® controller. Those target rates are displayed on the right side channel displays

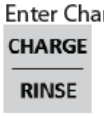
21. After foam is seen forming in the SafeGuard™ sensor chambers begin another walk-around visual inspection:
    - Check for leaks
    - Visually verify the presence of foam forming in each section manifold.
    - Verify each row unit has foam spitting out of in-furrow tube.

Charge routine exerpt from the owner's manual (see owner's manual for complete text):

The charge routine automatically opens the section valves and activates the system in simulated ground speed mode of 6 mph (not adjustable). This charges the entire system from the pump through the row units with chemical/water solution to prepare the system for field use. The system will run the charge routine until cancelled by the operator, a NO FLOW alarm that lasts longer than 15 seconds, or the CHARGE TIME timer expires. The CHARGE TIME timer can be adjusted by pressing the number and entering a new value before entering the Charge routine.

Procedure:

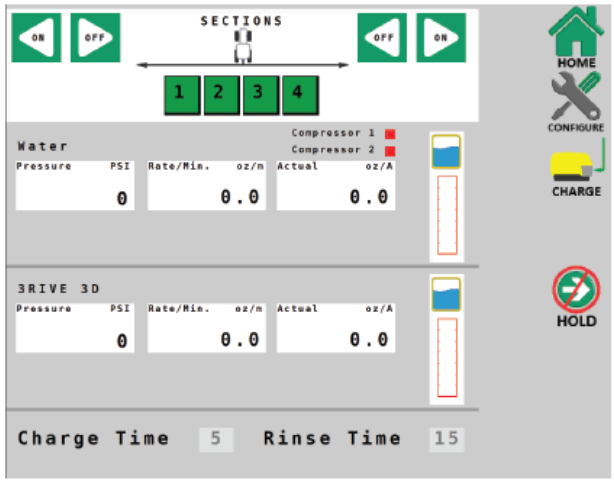
1. Enter Charge/Rinse from Configurations screen by pressing the Charge/Rinse softkey.



2. Enter the Charge routine by pressing the Charge softkey.

3. Begin the Charge routine by pressing the HOLD softkey.

Charge Screen



The system will pump solution through the system. The charge routine should run until a consistent flow of foam is coming out of each row unit. Typically the middle sections produce continuous foam first, followed by the outside sections. When a section is making acceptable foam, turn that section off. This will reduce the overall amount of chemical discharged during the charge routine. When all sections are producing adequate foam, turn on all sections again and verify that the SafeGuard monitor is showing ALL GOOD. The charge routine is now complete.

4. Stop the Charge routine by pressing the HOLD softkey again.

5. Exit the Charge routine by pressing the HOME softkey.

Run another RINSE routine to purge the system of foam and rinse the system with clean water.

Winterize per owner's manual if required.

System checkout complete.

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