



vApply Plumbing Recommendations and Installation

Precision Planting®

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vApply Plumbing Recommendations and Installation

Plumbing Introduction

Plumbing Overview

System Requirements

- Centrifugal, Piston, or Diaphragm pump
- 80 mesh filter installed downstream from the tank (50 mesh if using a vApplyHD (turbines removed) system)
- Pressure relief valve w/ 1” line after the pump System Accumulator.

vApplyHD Product Capabilities

vApplyHD is designed to integrate with most existing liquid systems and control to unparalleled performance levels. However, as equipment speed increases and users implement variable rate liquid prescriptions, factors come into play that may create a limitation in the system that restricts the performance capabilities. In order to achieve the greatest range and performance, we recommend plumbing your system to the specifications listed in this manual.

Pump compatibility includes: ground drive contact pumps, electric PWM driver pumps, and hydraulic PWM valve controlled pumps. On systems with PWM style controllers, the vApply rate control module will control the pump based on the setup pump parameters (see vApply Operator's Guide for setup process). Pumps should be plumbed to reliably self -prime (see Filter Kit call out and Tank Plumbing diagrams for more details).

In order to maintain a clean and healthy vApplyHD system, proper filtering is required. All systems must run an 80 mesh or higher filter to maintain adequate cleanliness in the plumbing to the vApplyHD modules. Two filter kits are provided by Precision Planting as discussed in the “Section Kit Plumbing” details later in this document.

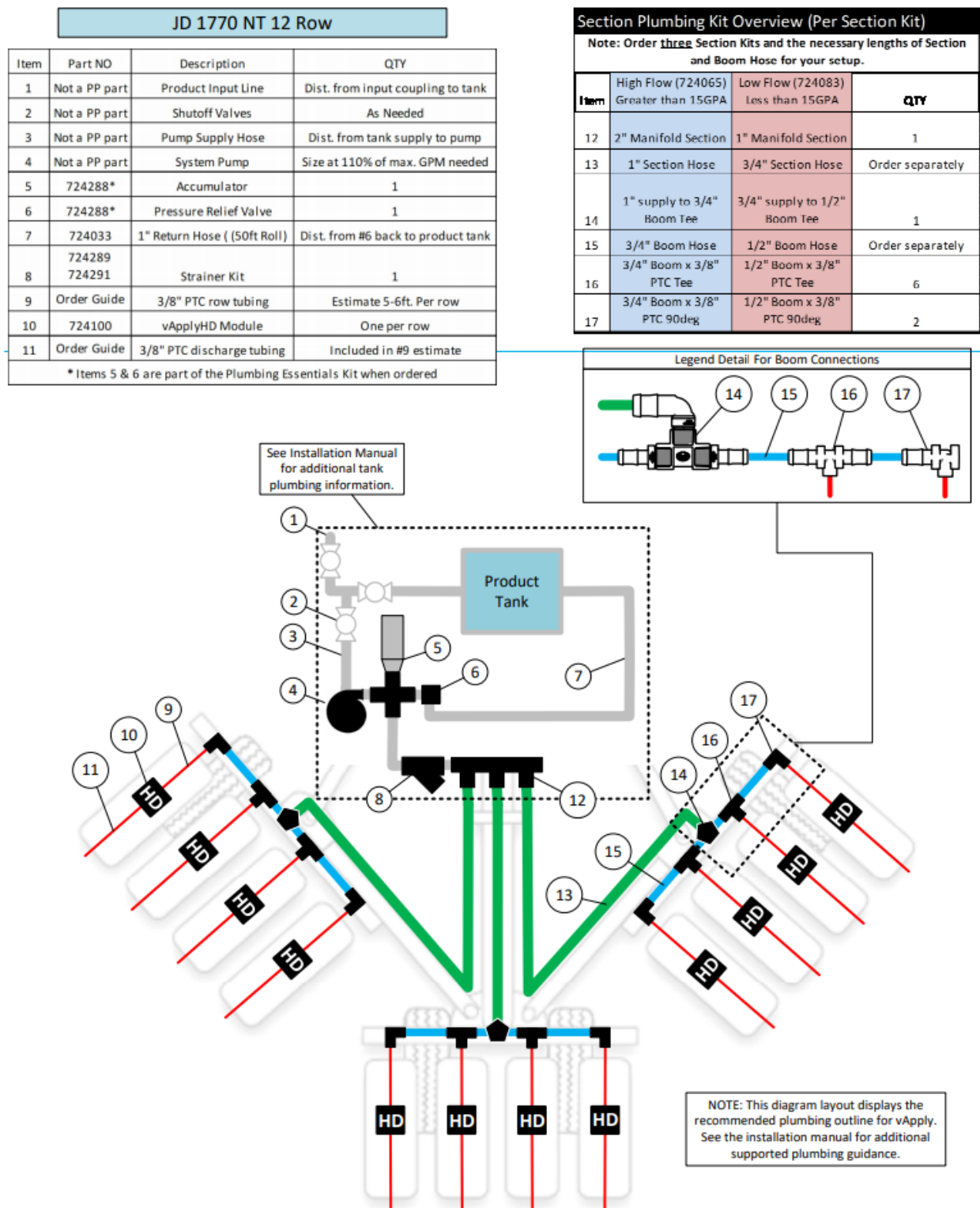
To ensure the vApplyHD system has the full range of rate control at all speeds, it is important that the vApplyHD modules are not restricted by supply due to plumbing from the pump to each row. Plumbing Section Kits and routing recommendations are split into two categories below based on rate ranges expected on the equipment. Please read through the Low Flow and High Flow recommendations to ensure that enough product can be supplied to all rows.

Finally, swath control capabilities are an added benefit of a vApplyHD setup. Each vApplyHD is controlled independently and will help reduce waste due to overlapping product. To provide the highest level of control, follow the recommendations in this document to ensure the row tubing is set up properly and does not allow for product “dribbling” when lifted or swathed off.

More details on each element of this system overview are provided below in this document.

Adhering to recommendations and maintaining proper plumbing layouts will provide the simplest and best vApplyHD performance. For any additional questions you may have, please contact your local Precision Planting Premier Dealer or Product Support via phone or support ticket.

Sample Plumbing Diagram



Sample Plumbing Diagram

The diagram above is a sample diagram to reference when looking over individual parts as described in the next few pages. Additional diagrams of planter makes, models, and configurations are included on the Precision Planting cloud.

Section Plumbing — High Flow

Section Plumbing Kit

In order to provide the best options for our customers, section plumbing kits are available directly from Precision Planting dealers. Based on application rates, both high flow and low flow kits are available and will ensure that the vApplyHD is adequately supplied with product from the system pump. Each kit is detailed in the following pages.

High Flow Plumbing (15GPA or more, acceptable for low flow rates as well)

The following outline of parts descriptions and installation recommendations is for High Flow Plumbing. Some parts discussed must be sourced from other liquid suppliers. Skip down to the “Low Flow Plumbing (15 GPA or less)” section for more information on Low Flow recommendations.

Product Input Line

The product input line (**#1 in the “Sample Plumbing Diagram” above**) is used to fill the system’s tanks with product. We recommend a 2” hose with connections allowing the supply vehicle to quickly hook up and fill the product tank. Using shutoff valves (three in this example; one at the at the input connection, one at the tank, and one at the tee to the rest of the system) will allow users to control the direction of flow for the system during fill up, operation, and draining or maintenance.

Shutoff Valve

Shutoff valves (**#2 in the “Sample Plumbing Diagram” above**) are used to stop or direct flow and allows system maintenance to be performed on the plumbing lines, fixtures, and control modules. Precision Planting does not supply or sell shutoff valves.

Pump Supply Line

The pump supply line (**#3 in the “Sample Plumbing Diagram” above**) delivers product from the holding tank(s) to the system pump. A 1.5 inch hose is used to adequately supply the pump with enough product from the tank. As indicated in the above diagram, this line can be connected into the Product Input Line at the second valve. Make sure to use a suction rated hose designed for liquid so that the pump does not collapse the hose when a vacuum is pulled. Precision Planting does not supply or sell suction hose.

System Pump

A pump (**#4 in the “Sample Plumbing Diagram” above**) is used to pull product from the holding tank and supply it to the rest of the system for application. vApply and vApplyHD is compatible with electric pumps, ground or hydraulic driven piston, centrifugal, or diaphragm pumps. In order for vApply to control the pump from the 20/20, electric pumps must have an electronic PWM driver while hydraulic pumps must have a PWM valve. For more details and plumbing recommendations see the Tank Layout Diagrams at the end of this document.

System Filter

An 80 mesh filter (#8 in the “Sample Plumbing Diagram” above) is required to ensure the system remains clean and free of debris. Due to the high rates of flow potentially running on a high flow system, Precision Planting offers a Strainer/Filter Kit to fulfill this requirement on all vApplyHD systems. This filter kit runs dual 2” 80 mesh filters in parallel to maintain adequate flow to the rest of the system. Filters that are larger than 80 mesh will allow particles into the vApplyHD that bind or block the flow sensors and render the module unable to control the flow as necessary.

The dual filters are outfitted with ¼” PTC fittings at the inlet and outlet of the strainer. These are used to plumb tubing to the vApply Base Module so that the 20/20 can monitor how clogged the filter has become over time. Once the pressure drop from debris has reached an unhealthy level, the 20/20 will alert the operator to use the self cleaning valves at the bottom of each filter to quickly flush the filters clean.

The strainer kit should be installed after the Essentials Kit and prior to the section manifold (#12 in the “Sample Plumbing Diagram” above). Refer to the end of this document for special instructions on systems also running an injection system.



Plumbing Essentials Kit

The Plumbing Essentials Kit contains an ACCUMULATOR, PRESSURE RELIEF VALVE, ¼” PTC for PUMP PRESSURE, and the necessary brackets and hardware to install. This kit is designed to install with the plumbing fittings from the Section Plumbing Kits and includes adapters to facilitate connections to High and Low Flow kits.

The Accumulator (#5 in the “Sample Plumbing Diagram” above) is used to absorb pressure waves that travel from the pump through the plumbing and into the modules. By reducing spikes

in PSI at the vApplyHD modules, rate control is more precise and variability within the row is mitigated.

The Pressure Relief Valve (**#6 in the “Sample Plumbing Diagram” above**) allows for excess flow from the pump to return back to the holding tank. This allows the entire vApply system to maintain pressure and adequate volume during rate changes or entering and existing swath zones. vApply plumbing systems must include a Pressure Relief Valve located after the pump and prior to the strainer assembly (as shown in the “Sample Plumbing Diagram” above).

The Pressure Relief Valve also includes a ¼” PTC port to connect to the pump pressure sensor port on the vApply Module. Connecting this PTC to the vApply module with ¼” tubing allows the 20/20 to monitor pump pressure to maintain the optimum pump speed necessary to supply product to the entire system. A single pressure relief valve can handle pumps up to 35 GPM. If the pump is capable of more than 35 GPM output, a second pressure relief valve should be added to the system (part number 724539). If the pump is capable of more than 70 GPM output, three pressure relief valves should be installed.

Product Return Line

The Product Return Line (**#7 in the “Sample Plumbing Diagram” above**) should be at least a 1” line to allow excess product from the Pressure Relief Valve to return to the product tank or back to pump inlet (not recommended to return to pump inlet with centrifugal pumps). This line should be installed with the Accumulator Kit.

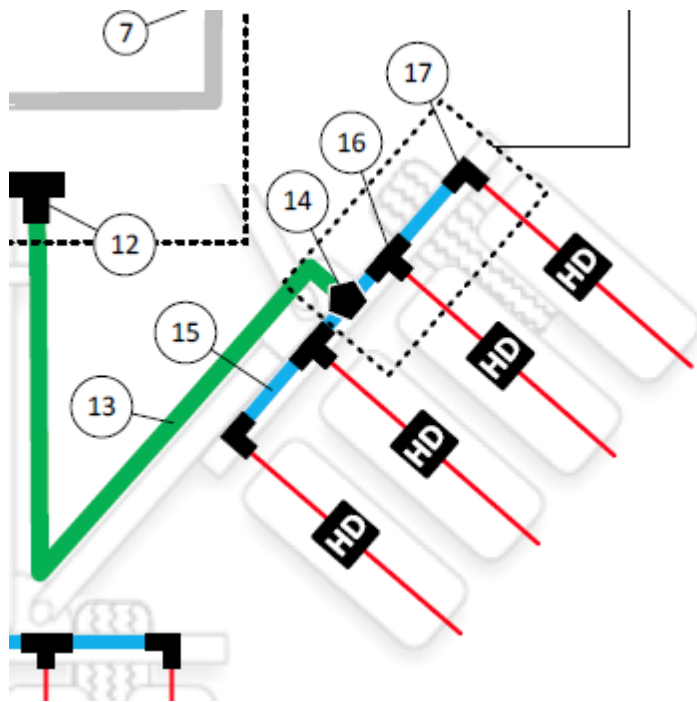
Manifold Sections

The manifold sections (**#12 in the “Sample Plumbing Diagram” above**) are used to supply product from the pump to each boom section on the machine. Our High Flow kit uses a 2” flange section tee and adapts to a 1” barb for the Section Supply Line.



Section Supply Lines

The Section Supply Lines (**#13 in the “Sample Plumbing Diagram” above**) are 1” hoses that carry product from the manifold sections to the middle of the Boom Line. We recommend using one section supply line for every 10 rows. When running multiple section supply lines to a single boom line of more than 10 rows, split the boom line in thirds to properly distribute product evenly to all rows (see the green lines in the diagram below).



Supply Boom Tee Fitting

The supply boom tee fittings (#14 in the “Sample Plumbing Diagram” above) connect the section supply line to the boom hose. These fittings use a 1” hose barb fitting to connect to the section supply line and then tee into $\frac{3}{4}$ ” barb fittings that connect into the boom hose. This fitting should be connected to the boom hose as close to the middle as possible.



Boom Hose

The boom hose (sometimes referred to as a wet boom) (#15 in the “Sample Plumbing Diagram” above) is a $\frac{3}{4}$ ” hose and is used to distribute product to each row in that section.

NOTE: While the boom hose may be directly connected to more than 10 rows in series, make sure that there is one section supply line for every 10 rows.

Boom to PTC Fitting

This boom hose to PTC fitting (**#16 & #17 in the “Sample Plumbing Diagram” above**) was designed by Precision Planting to simplify installation and reduce the likelihood of leaks by eliminating additional joints needed to create a traditional boom line row outlet. There are two styles of this fitting; one is a Tee fitting designed to be placed in the middle of the boom hose, the other is a 90 degree fitting used to complete the boom hose at the end rows. Both fittings utilize $\frac{3}{4}$ ” barb(s) and a $\frac{3}{8}$ ” PTC to adapt to the row tubing.



Row Tubing

Row tubing (**#9 & #11 in the “Sample Plumbing Diagram” above**) is used to deliver product to the vApplyHD module and is made up of $\frac{3}{8}$ ” PTC Tubing for easy connection to the vApplyHD module. This tubing is also used to deliver the product from the vApplyHD module to the ground.

vApplyHD Module

The vApplyHD module (**#10 in the “Sample Plumbing Diagram” above**) communicates with the existing SRM on the row and is controlled by the 20/20 to accurately regulate the desired rate specific to that row. Much like a vDrive motor, the vApplyHD adjusts product output to maintain the correct rate through changes in speed, curves in the field, and in and out of swath events. The vApplyHD Module has a $\frac{3}{8}$ ” PTC inlet and a $\frac{3}{8}$ ” PTC outlet for quick connection to your supply and application lines on the row unit.



Section Plumbing — Low Flow

Low Flow Plumbing

The following outline of parts descriptions and installation recommendations is for Low Flow Plumbing. Some parts discussed must be sourced from other liquid suppliers. Return to the

section above titled “High Flow Plumbing (15 GPA or more)” for more information on High Flow recommendations.

Product Input Line

The product input line (**#1 in the “Sample Plumbing Diagram” above**) is used to fill the system’s tanks with product. We recommend a 2” hose with connections allowing the supply vehicle to quickly hook up and fill the product tank. Using shutoff valves (three in this example; one at the input connection, one at the tank, and one at the tee to the rest of the system) will allow users to control the direction of flow for the system during fill up, operation, and draining or maintenance.

Shutoff Valve

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System Pump

A pump (**#4 in the “Sample Plumbing Diagram” above**) is used to pull product from the holding tank and supply it to the rest of the system for application. vApply and vApplyHD is compatible with electric or hydraulic centrifugal, piston, or diaphragm pumps. In order for vApply to control the pump from the 20/20, electric pumps must have an electronic PWM driver while hydraulic pumps must have a PWM valve. For more details and plumbing recommendations see the Tank Layout Diagrams at the end of this document.

System Filter

An 80 mesh filter (**#8 in the “Sample Plumbing Diagram” above**) is required to ensure the system remains clean and free of debris. Due to the high rates of flow potentially running on a high flow system, Precision Planting offers a Strainer/Filter Kit to fulfill this requirement on all vApplyHD systems. This filter kit runs dual 2” 80 mesh filters in parallel to maintain adequate flow to the rest of the system. Filters that are larger than 80 mesh will allow particles into the vApplyHD that bind or block the flow sensors and render the module unable to control the flow as necessary.

The dual filters are outfitted with ¼” PTC fittings at the inlet and outlet of the strainer. These are used to plumb tubing to the vApply Base Module so that the 20/20 can monitor how clogged the

filter has become over time. Once the pressure drop from debris has reached an unhealthy level, the 20/20 will alert the operator to use the self cleaning valves at the bottom of each filter to quickly flush the filters clean.

The strainer kit should be installed after the Essentials Kit and prior to the section manifold (**#12 in the “Sample Plumbing Diagram” above**). Refer to the end of this document for special instructions on systems also running an injection system.



Plumbing Essentials Kit

The Plumbing Essentials Kit contains an ACCUMULATOR, PRESSURE RELIEF VALVE, ¼” PTC for PUMP PRESSURE, and the necessary brackets and hardware to install. This kit is designed to install with the plumbing fittings from the Section Plumbing Kits and includes adapters to facilitate connections to High and Low Flow kits.

The Accumulator (**#5 in the “Sample Plumbing Diagram” above**) is used to absorb pressure waves that travel from the pump through the plumbing and into the modules. By reducing spikes in PSI at the vApplyHD modules, rate control is more precise and variability within the row is mitigated.

The Pressure Relief Valve (**#6 in the “Sample Plumbing Diagram” above**) allows for excess flow from the pump to return back to the holding tank. This allows the entire vApply system to maintain pressure and adequate volume during rate changes or entering and existing swath zones. vApply plumbing systems must include a Pressure Relief Valve located after the pump and prior to the strainer assembly (as shown in the “Sample Plumbing Diagram” above).

The Pressure Relief Valve also includes a ¼” PTC port to connect to the pump pressure sensor port on the vApply Module. Connecting this PTC to the vApply module with ¼” tubing allows the 20/20 to monitor pump pressure to maintain the optimum pump speed necessary to supply product to the entire system. A single pressure relief valve can handle pumps up to 35 GPM. If

the pump is capable of more than 35 GPM output, a second pressure relief valve should be added to the system (part number 724539). If the pump is capable of more than 70 GPM output, three pressure relief valves should be installed.

Product Return Line

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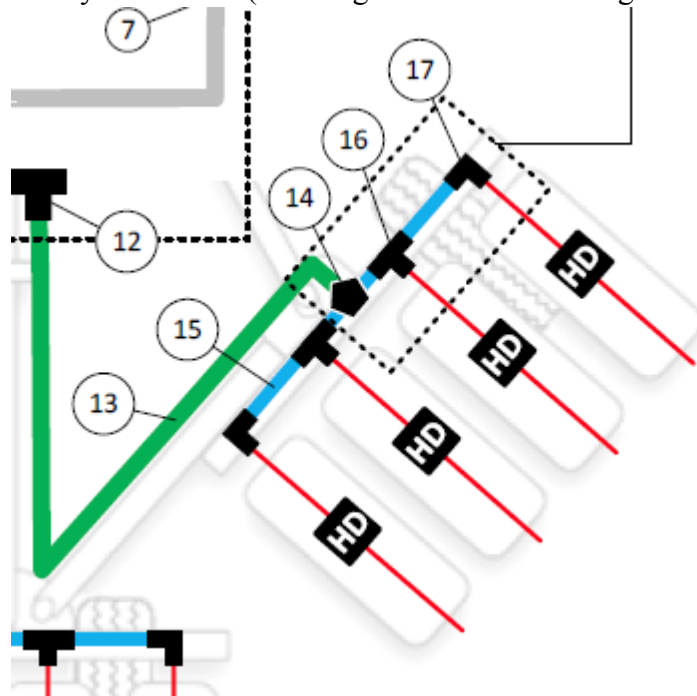
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vApplyHD Module

The vApplyHD module (#10 in the “**Sample Plumbing Diagram**” above) communicates with the existing SRM on the row and is controlled by the 20/20 to accurately regulate the desired rate specific to that row. Much like a vDrive motor, the vApplyHD adjusts product output to maintain the correct rate through changes in speed, curves in the field, and in and out of swath events. The vApplyHD Module has a $\frac{3}{8}$ ” PTC inlet and a $\frac{3}{8}$ ” PTC outlet for quick connection to your supply and application lines on the row unit.

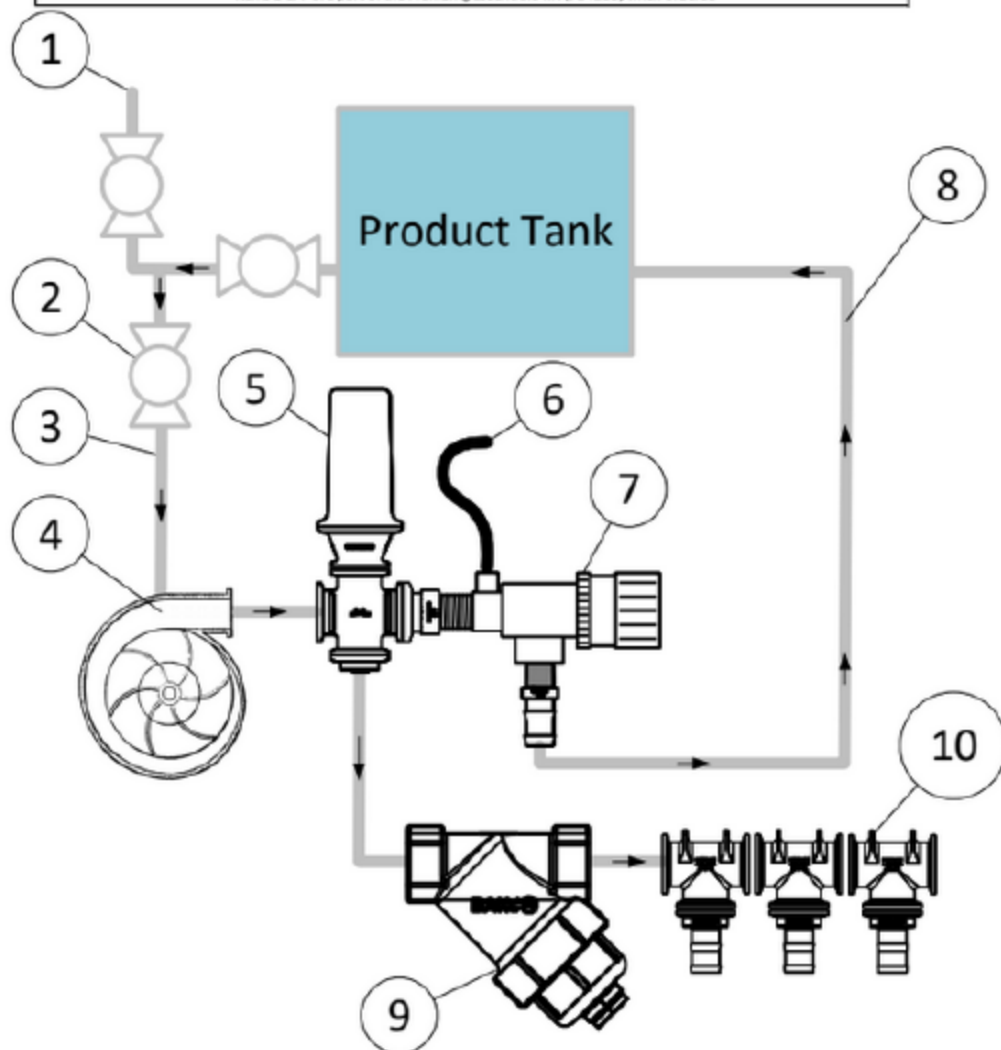


System Examples

Single Tank

Single Tank Plumbing							
Item	Part NO	Description	QTY	Item	Part NO	Description	QTY
1	Not a PP part	Product inputline	As Needed	6	NO Part #	1/4" PTC: Pump Pressure into vApply module	1
2	Not a PP part	Shutoff Valves	As Needed	7	72406-4*	Pressure Relief Valve	1
3	Not a PP part	Suction Hose	As Needed	8	724033	1" Return Hose (50ft Roll)	As Needed
4	Not a PP part	Any Compatible Pump	As Needed	9	724291 or 724289	Strainer Kit (low or high)	1
5	724296*	Accumulator	1	10	Manifold Section	2" or 1" Section Tee from High/Low Flow Kits	1 section for every 10 rows

* Items 5 & 7 are part of the Plumbing Essentials Kit (724288) when ordered

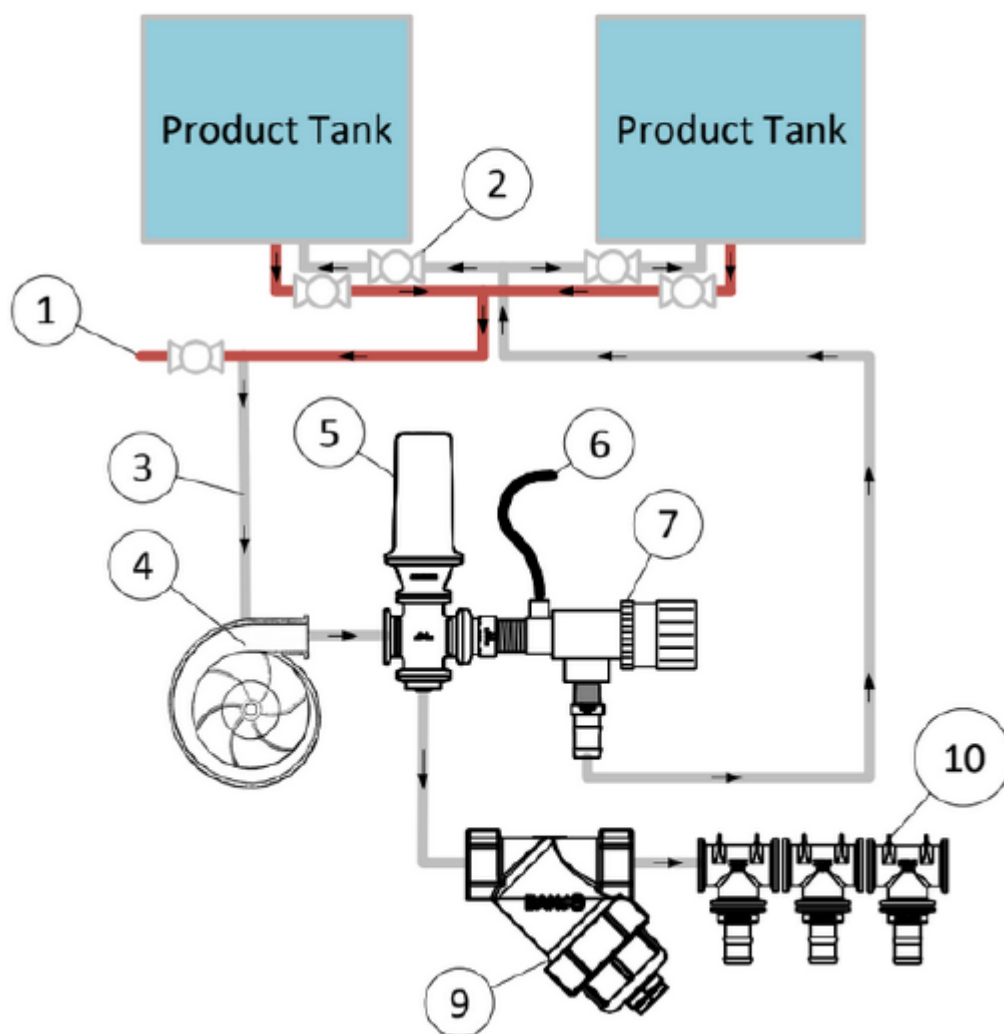


A standard single tank setup should follow the recommended layout above. This setup will facilitate the most robust operation of vApply and allow the vApplyHD modules on each row to operate to their maximum capacity.

Dual Tank

Dual Tank Plumbing							
Item	Part NO	Description	QTY	Item	Part NO	Description	QTY
1	Not a PP part	Product input line	As Needed	6	No Part #	1/4" PTC Pump Pressure into vApply module	1
2	Not a PP part	Shutoff Valves	As Needed	7	724064*	Pressure Relief Valve	1
3	Not a PP part	Suction Hose	As Needed	8	724033	1" Return Hose (50 ft roll)	As Needed
4	Not a PP part	Any Compatible Pump	As Needed	9	724291 or 724189	Strainer Kit (low or high)	1
5	724296*	Accumulator	1	10	Manifold Section	2" or 1" Section Tee from High/Low Flow Kits	1 section for every 10 rows

* Items 5 & 7 are part of the Plumbing Essentials Kit (724288) when ordered



A standard dual tank setup should follow the recommended layout above. This setup will facilitate the most robust operation of vApply and allow the vApplyHD modules on each row to operate to their maximum capacity.

The most important component to a multi tank installation is even distribution of product between tanks. Simply tying all tanks together at the lowest point is not adequate as hose size, length, and orientation play a major part of how quickly product can distribute between tanks. In order to reduce the risk of overfilling a tank (during system filling or as a result of product passing through the pressure release valve) all distribution points must be as equal as possible.

Notice that both the product-input/pump-supply line and the pressure relief return line split right in the middle of the two tanks.

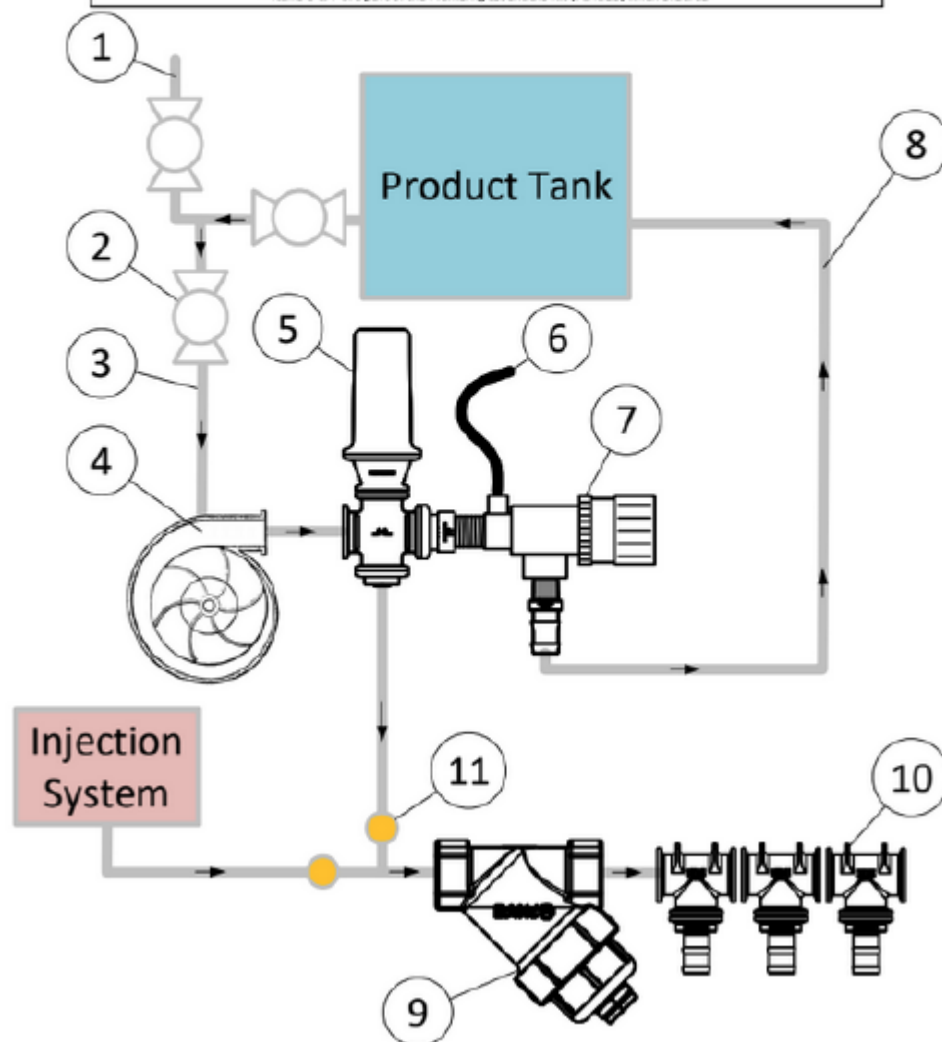
The second measure we take to mitigating unequal tank distribution are the shutoff valves (**item 2**) on both sides of the line split. This not only allows the tanks to be shut off completely in the event of system maintenance, but allows one side or the other to be partially restricted if filling is uneven.

It is acceptable when using diaphragm or piston pumps to return the pressure relief bypass back to pump inlet rather than to the tanks. It is recommended to have some distance between the pump and where product is returned to pump inlet to prevent cavitation issues. With extremely high volume pumps, this is especially important and returning to pump inlet can sometimes be problematic for pump stability and cavitation.

Injection System

Injection System Tank Plumbing							
Item	Part NO	Description	QTY	Item	Part NO	Description	QTY
1	Nota PP part	Product input line	As Needed	6	No Part #	1/4" PTC Pump Pressure into vApply module	1
2	Nota PP part	Shutoff Valves	As Needed	7	724064*	Pressure Relief Valve	1
3	Nota PP part	Suction Hose	As Needed	8	724033	1" Return Hose (50ft Roll)	As Needed
4	Nota PP part	Any Compatible Pump	As Needed	9	724291 OR 724289	Strainer Kit (low or high)	1
5	724296*	Accumulator	1	10	Manifold Section	2" or 1" Section Tee from High/Low Flow Kits	1 section for every 10 rows
				11	Nota PP part	Check Valves	As Needed

* Items 5 & 7 are part of the Plumbing Essentials Kit (724188) when ordered



An injection system is very similar to a standard or multiple tank setup. Follow the guidelines from the respective tank setup on your system to ensure proper filling and distribution of product.

The changes that need to be made for an injection system are illustrated above. Plumb the injection system between the accumulator and the strainer kit per the guidelines given by the injection system manufacturer. This will ensure that the carrier and injection product are strained prior to being sent to the section lines.

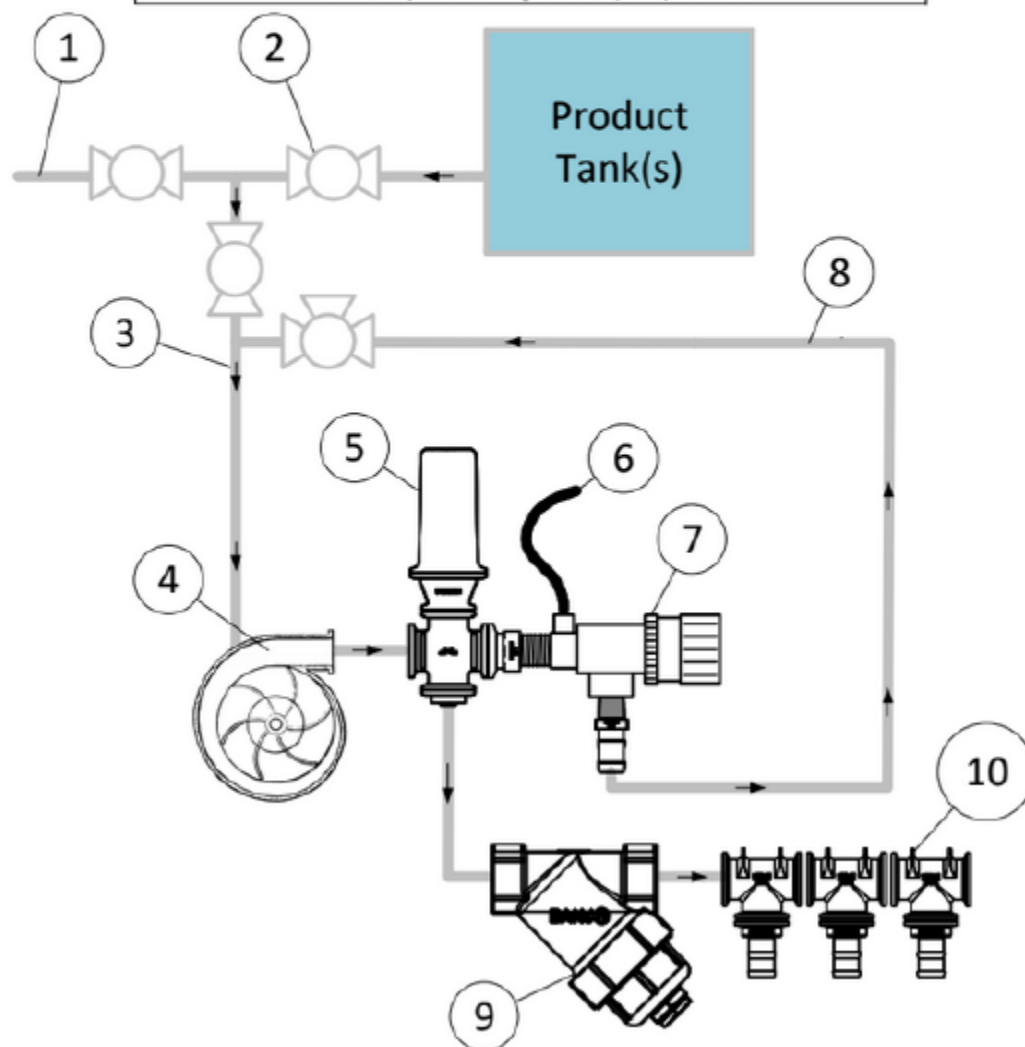
Note that there are check valves (from the injection system provider) installed to keep the injected product from back tracking into the holding tank and pump.

Return to Inlet



Return to Inlet Plumbing							
Item	Part NO	Description	QTY	Item	Part NO	Description	QTY
1	Not a PP part	Product inlet line	As Needed	6	No Part #	1/4" PTC Pump Pressure into vApply module	1
2	Not a PP part	Shutoff Valves	As Needed	7	724064*	Pressure Relief Valve	1
3	Not a PP part	Suction Hose	As Needed	8	724033	1" Return Hose (Soft Roll)	As Needed
4	Not a PP part	Any Compatible Pump	As Needed	9	724291 or 724289	Strainer Kit (low or high)	1
5	724299*	Accumulator	1	10	Manifold Section	2" or 1" Section Tee from High/Low Flow Kits	1 section for every 10 rows

* Items 5 & 7 are part of the Plumbing Essentials Kit (724288) when ordered



Due to unique tank/pump location or more than two holding tanks in the system, it may be necessary to plumb the pressure relief return line back into the pump inlet hose. While there is no exact recipe, the following items will help create a reliable setup.

Do not return directly into the inlet fitting on the pump itself. Leaving some room prior to the pump will help mitigate cavitation and unstable product supply. Many systems will return before the filter like the image above to prevent issues with filtering the product over and over. Another key to creating a system that self primes and functions smoothly is to run all supply and return hoses as flat as possible. Hills and valleys can allow small air pockets to build up and may lead to cavitation and a loss of suction in the pump. It may even be necessary to install a three-way valve

(item 12) prior to returning into the inlet line. This valve can be turned to allow air and product to dump onto the ground until the pump has established a functioning prime. At this point the valve is then returned back to it's normal position to allow product to return into the inlet hose.

Extremely large pumps can sometimes have difficulty with cavitation or general pump stability when returning large volumes to pump inlet. This can be improved by increasing inlet line size and increasing the distance between where product is returned to the inlet plumbing and the pump. There are some very large pumps that are still unsuccessful in returning to pump inlet due to the turbulence and

It is important to know that this recommendations are helpful, but not always enough. Variables in plumbing health, installation location, pump output volume and pressure, as well as the product used can still lead to a scenario that causes cavitation. At that time it would be necessary to prime the pump again (using the three- way valve or another method) before the pump will be able to continue supplying the vApplyHD modules.

Dual Strainer Kit—724289

Qty.	Part Name	Description
1	Flange Kit	2" Seals and Clamps
2	Flange Fitting	2" Tee
2	Flange Fitting	2" 90 Deg Flange
1	Flange Fitting	2" Flange Ball Valve
2	Tubing	Tubing 1/4" LLDPE, 5' Black
1	Mount Plate	Strainer 2" "H" Bracket
2	Strainer	2" Flange 80 Mesh
2	Valves	Strainer Valve For Cleanout
2	Hose Section	24"
2	Flange Fitting	2" Flange 1 1/2" Barb
1	Flange Fitting	2" Flange 90 Deg 1 1/2" Barb
1	Hardware Kit	Misc. Nuts, Bolts, Washers, and Clamps
2	U-Bolt	7"x7" Tube
2	U-Bolt	7"x5" Tube
2	Bracket	Vac Tube Support (17")

Find a good location to mount your bracket and make sure there will be enough room to install after assembling the Strainer Kit. Most installations will mount the Strainer Kit after the essentials kit and prior to the section manifolds. See the vApplyHD System Plumbing Recommendation document for additional information and complete plumbing overview.

Step 1:**Assemble The Bracket**

Open the Hardware Kit and use the provided 1/4" bolts, washers, and nuts to attach the bracket plate to the toolbar bracket arms. Assemble this bracket so that it will hang the strainers away from the toolbar so that they can be easily cleaned out without spilling on the equipment. Leave the bracket assembly off of the planter to make assembly easier to work with.



Step 2:

Assemble The Strainers

Begin by locating the strainer bodies, quick drain valves, and the 3/4" hoses.



Step 3:

Remove the plugs from the bottom of the strainer and insert the quick drain valves as shown.

**Step 4:**

Slide the two 3/4" hoses on to the quick drain valve.

There are no hose clamps for these two hoses as they will never have any pressure. These are only used to allow quick filter cleanout and route the debris down to the ground and away from the equipment.



Step 5:

Assemble The Flange Fittings

Lay out the flange fittings and strainers as seen in the photo below. Assemble the inlet side and outlet side as one unit prior to connecting to the strainers. Use a flat surface to make sure the inlet and outlet sides are square in order to easily attach to the strainer bodies. Make sure to use a rubber seal and the correct size flange clamp on each connection.

Outlet

Inlet



Overhead View



- Qty 7
Flange Seal

- Qty 7
Flange Clamp

Assemble “inlet and outlet” first.



Assemble “inlet and outlet” onto strainers.



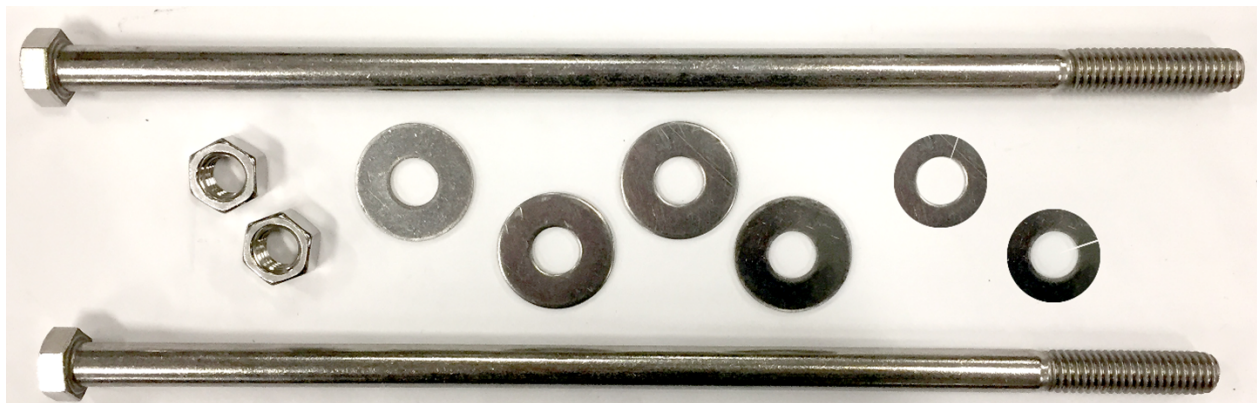
Slide the assembled strainers onto bracket assembly.



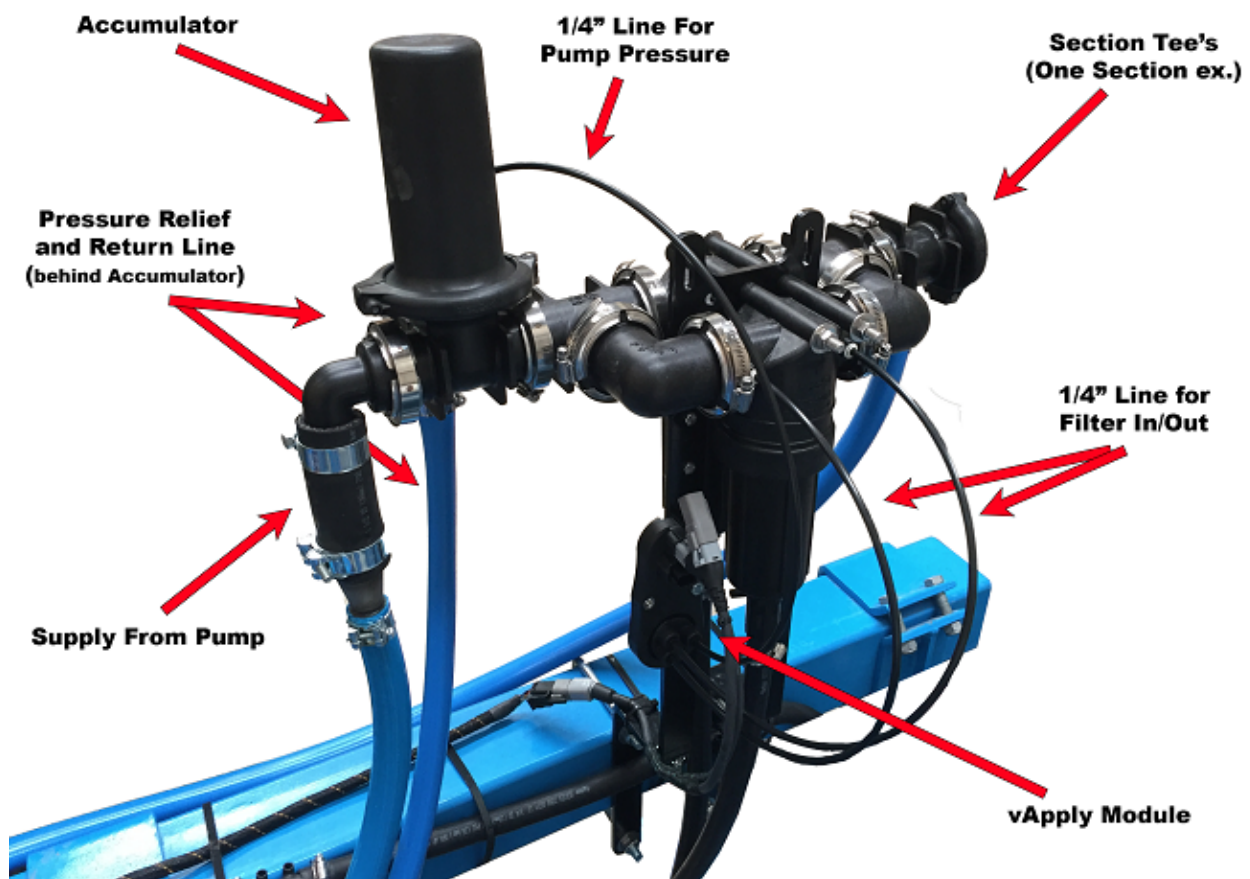
Use the long bolts to attach the two strainers to either side of the bracket plate. Use a washer on both the bolt head and nut side to clasp the strainers firmly.

Note: Make sure to install the 1/4" PTC plugs on the inside of the filter prior to assembly on the bracket.

Note: Be aware of the flow direction needed for these strainers. There are arrows on the strainer tops to indicate flow direction. This document shows the setup with flow moving from right to left. You may want to assemble in the opposite direction depending on pump location in order to create an easy hose layout.



Use the included 1/4" tubing to connect the strainer inlet and outlet PTC fittings into the vApply module.



Finally, mount the entire assembly onto the toolbar using the provided 7x7, 5x7, or 1/2" bolts.

Essentials Kit — 724288

Each kit includes the following pieces. Some of these parts can be ordered individually in the Detailed Order guide and are noted with an asterisk (*) symbol. Please see the order guide for part numbers and pricing.

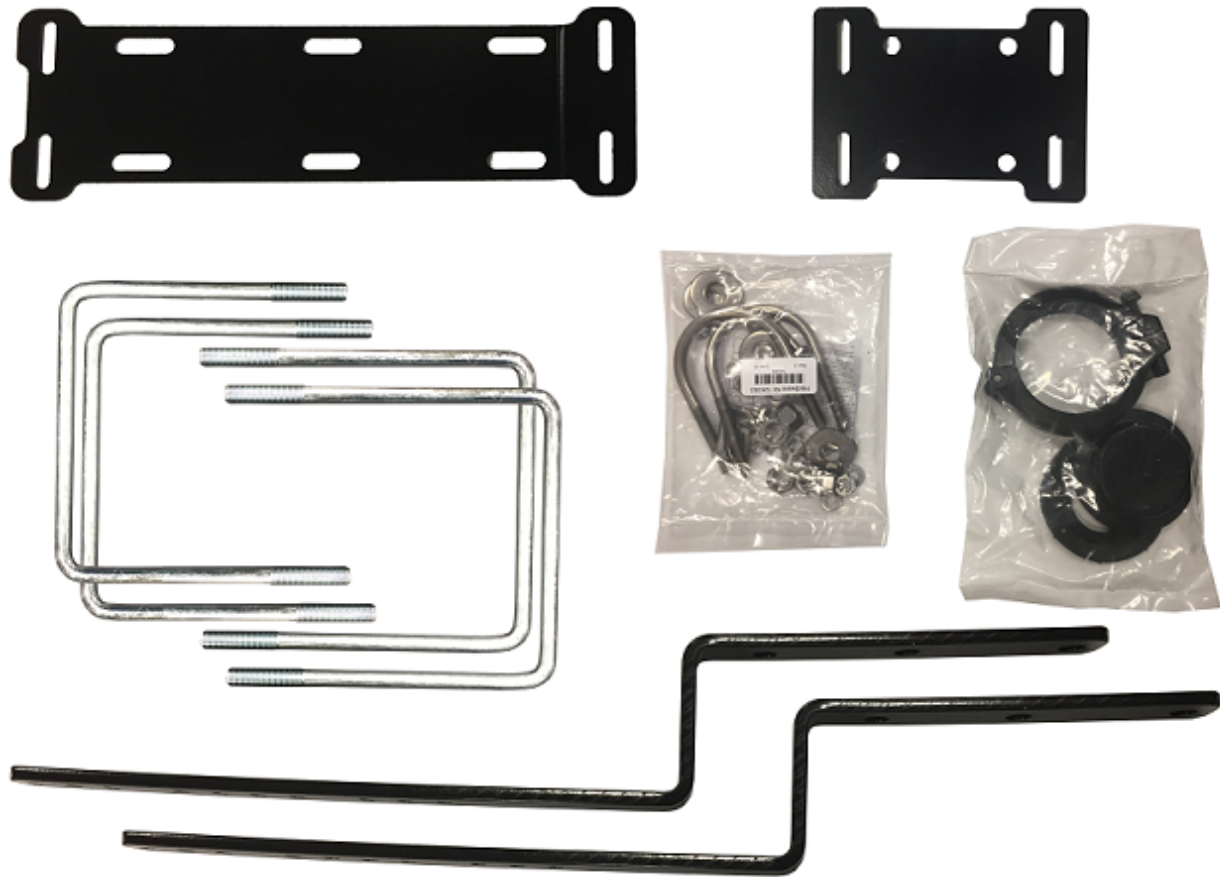
Part	Description
Relief Valve*	1" barb outlet with threaded port for pressure sensor
Accumulator*	Accumulator body with ball valve shutoff
Bracket Kit	Brackets and Support Arms
Hardware Kit	Bolt Hardware, Fittings, and Tools



Main Assembly

Unpack the main assembly of the Essentials Kit

The Essentials Kit comes already assembled from Precision Planting as shown. Look over the kit and make sure that nothing has been damaged in shipping.



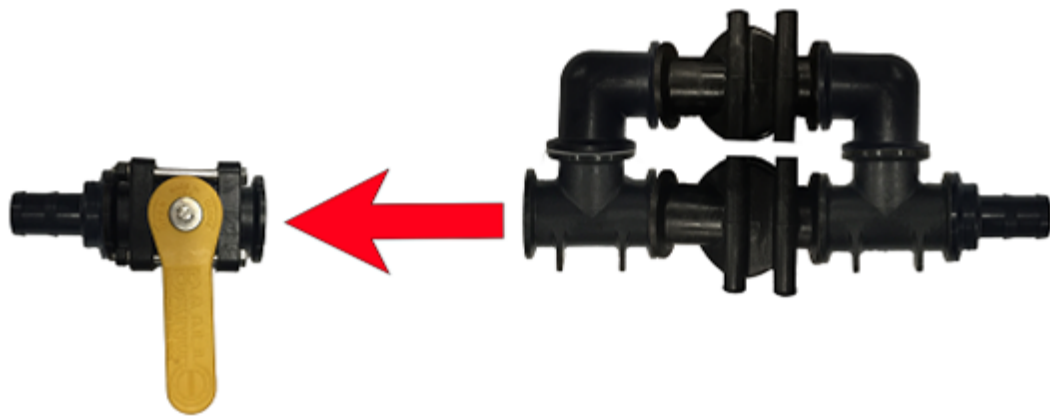
Unpack the hardware kit

Check the shipping box for the following items:

Part
Small Bracket for Main Assembly
Bracket extension for Section Plumbing Kits
Bracket Arms (qty 2)
7x7 U-Bolts (qty 2)
5x7 U-Bolts (qty 2)
Hardware Bag
Flange Cap Kit
1/4" Pressure Tube

Option 1: Install on Strainer Kit

Our recommendation is to add the Essentials Kit directly onto your Strainer Kit. Simply remove the inlet assembly from the strainer as shown below and drop the Essentials Kit assembly in.



Inlet

Outlet



Option 2: Assemble the Bracket

Find a good location to mount your bracket. Most installations will centrally mount the Essentials Kit near the pump. This location will be where the main hose from the pump supplies the Section Kits and where the Pressure Relief Valve allows product to bypass as needed back to the tank. See the vApplyHD System Plumbing Recommendation document for additional information and complete plumbing overview.

Use four of the ¼” nuts, lock washers, and bolts to attach the small bracket plate to the tool bar bracket arms as shown.



Use the included 7x7 or 5x5 toolbar U-bolts to secure the bracket to your planter. It may be necessary to source other U-bolt sizes if mounting in a location with a smaller/larger bar section.

Make sure to clamp flange to barb fittings on prior to attaching to the bracket. These can be found in the Strainer Kit or sourced separately.

Next, use the two U-bolts from the Hardware Bag (with the respectively sized lock washers and nuts) to attach the Essentials Kit to the bracket assembly. See image below.



After the main essential kit assembly is attached to the bracket, install the 1/4" tubing between the PTC fitting on the pressure relief valve and the pump PTC fitting on the vApply module.



The remaining hardware may be used to build the Section Plumbing Kits onto the long bracket. These Section Plumbing Kits will make up your manifold and feed product out to each section of the planter. If the Essentials Kit, Strainer Assemblies, and Section manifolds are all mounted separately, it will be necessary to come up with your own location or supports for the long bracket. (Extra support arms can be ordered using part number 730242).

Pressure relief add on kit (724539)

For pumps that are capable of output greater than 35 GPM, a second pressure relief bypass valve should be added to the system. For pumps capable of greater than 70 GPM output, three bypass valves are required.

The pressure relief add on kit components are shown below in the orientation of how they will be assembled. Teflon tape or other suitable thread sealant should be used on the threaded components prior to assembly.

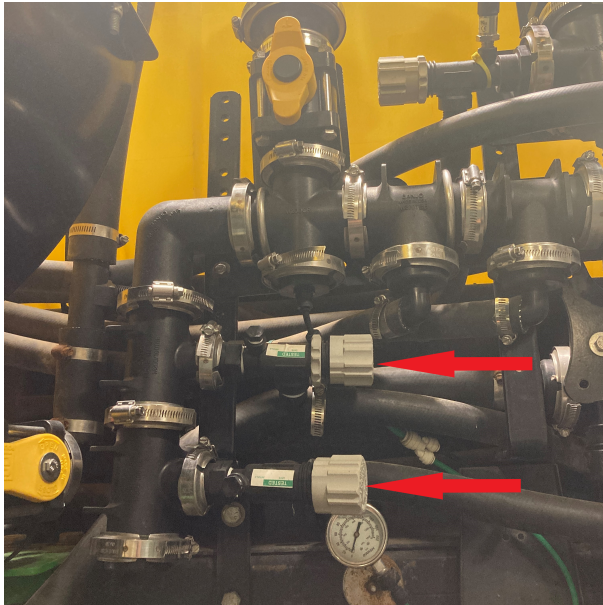


The pressure relief add on kit can be added in a convenient location of the plumbing of the liquid system. This kit is intended to be easily added in with the other components of the vApplyHD plumbing system, so it can be added near the accumulator or section manifold components as shown with the arrow below.



The hose barb fitting for the exit of the relief valve will fit 1" hose. The hoses from each relief valve can be returned separately to the tank, or can combine into one larger hose, if the one hose

is of sufficient size for the length of hose. Here is an example of a planter manifold system with two bypasses installed, your system does not have to match this picture, it is provided as a reference.



When setting the maximum system pressure for a multiple bypass system, it is recommended to turn them up together to the intended system pressure. To accomplish this, turn the knob on one valve until there is no longer a change to system pressure. Then turn the knob on the next valve until there is no longer a change to system pressure. Continue to alternate valves until you reach the desired system pressure. It can be helpful to periodically adjust it backwards as well to check pressure drops when it is turned out, to ensure one valve is not set to a higher pressure than the other valve. It is not critical that they are exactly the same, however it is best if they are close.