

vApplyHD[®]

Installation Manual

Precision Planting[®]

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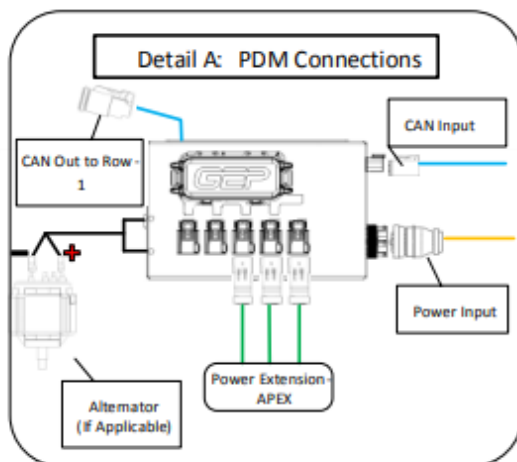
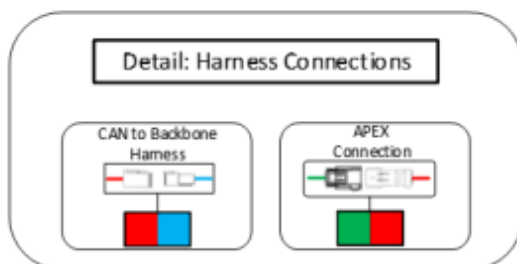
Overview of vApplyHD system installation

Installation of the pump and plumbing for vApplyHD systems

All vApplyHD systems have certain plumbing requirements and recommendations to ensure performance. The document “vApply Plumbing Recommendations and Installation (955657)” should be referenced for pump and plumbing installation. It can be found at <https://cloud.precisionplanting.com/products/#product-21-installation-resources>

SRM base system installation

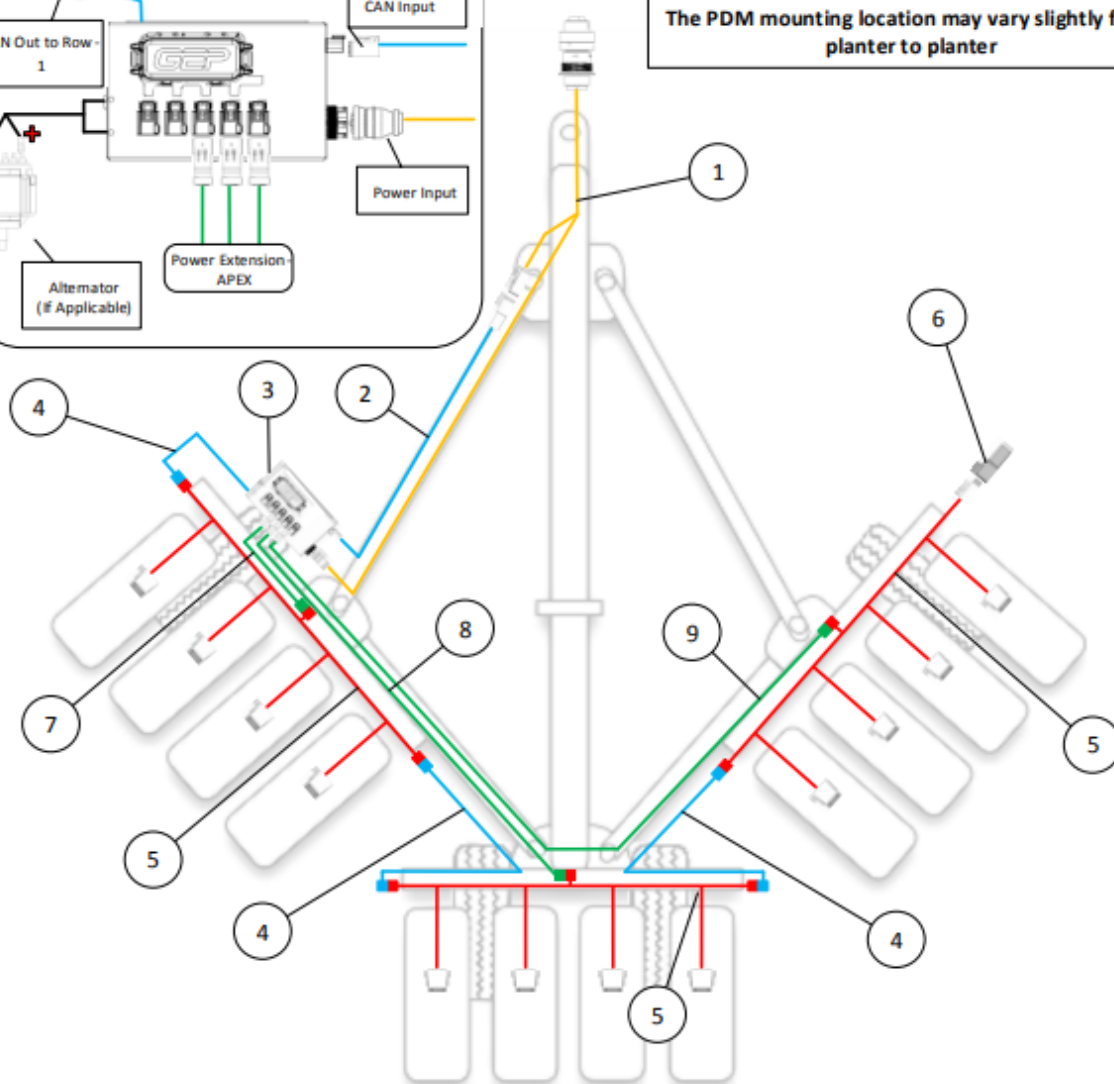
All vApplyHD systems will need the SRM base system installed on the implement. This includes a 20/20 Gen3 or 20/20 Gen2 monitor in the tractor to operate the system. Installation documents and videos for the SRM base system can be found at <https://cloud.precisionplanting.com/products/#product-86-installation-resources>. Below is a diagram of the SRM base system. Note: Sidedress systems utilizing vApplyHD flex modules will not need the SRM or row harness.



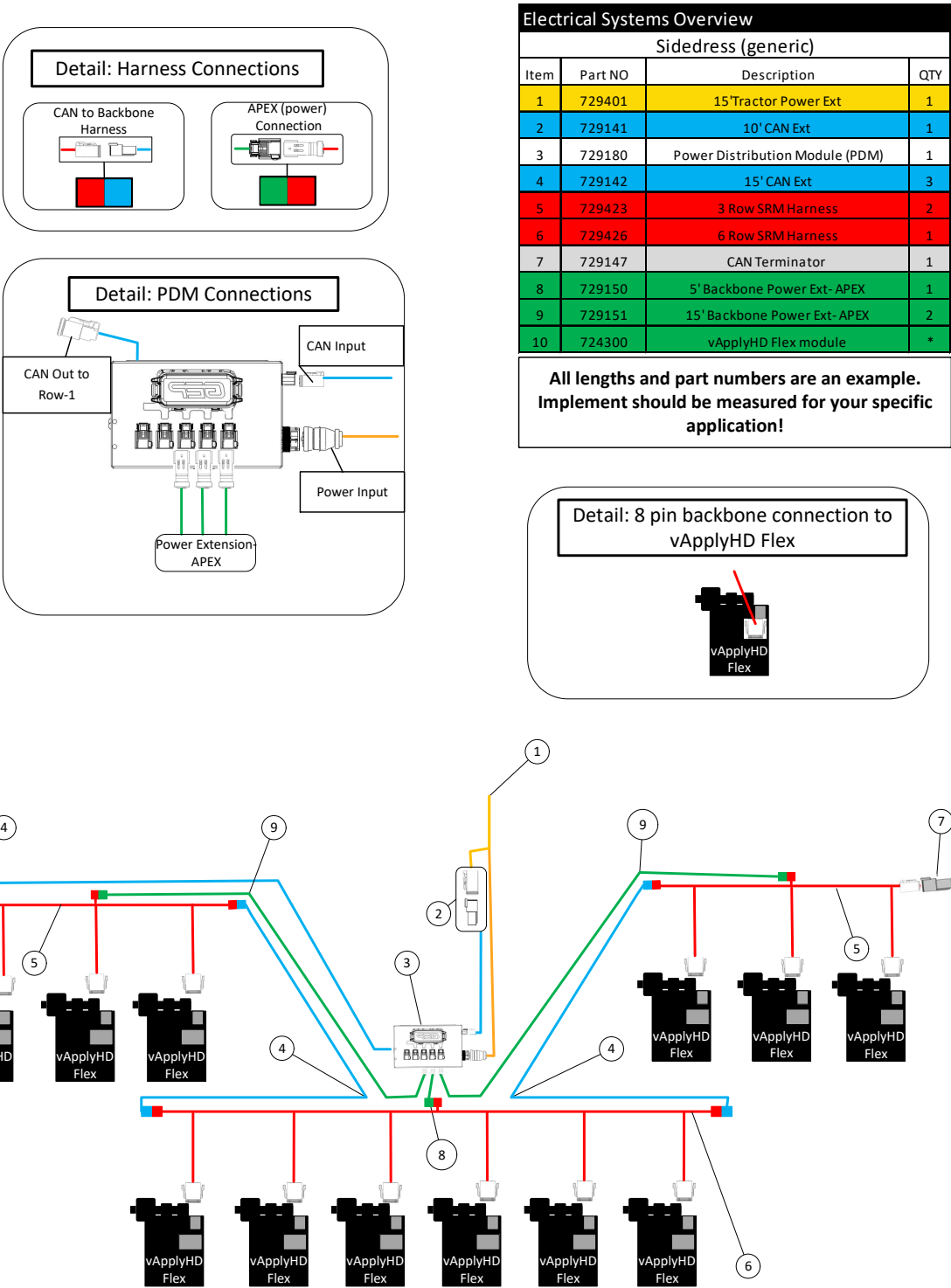
Electrical Systems Overview			
John Deere 1770NT- 12R30			
Item	Part NO	Description	QTY
1	729402	25' Tractor Power Ext	1
2	729143	20' CAN Ext	1
3	729180	Power Distribution Module (PDM)	1
4	729140	5' CAN Ext	3
5	729424	4 Row SRM Harness	3
6	729147	CAN Terminator	1
7	729150	5' Backbone Power Ext- APEX	1
8	729151	15' Backbone Power Ext- APEX	1
9	729152	25' Backbone Power Ext- APEX	1

Note: Item 1&2 are part of a kit when ordered

The PDM mounting location may vary slightly from planter to planter

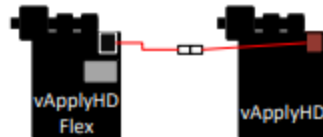


Below is a diagram showing sidedress bar installation of vApplyHD Flex modules. In this installation the row harness and SRM are not needed as the vApplyHD Flex module will plug directly into the backbone



Detail: Two product connection of 2nd vApplyHD (without CAN hub)

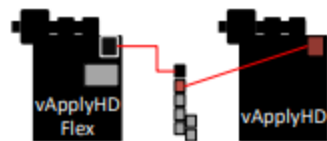
Black connector - Row CAN
jumper to 1st product HD
(i.e. 729482)



729761 2nd product ID, with **Brown**
connector plugged into 2nd
product vApplyHD (i.e. 729761)

Detail: Two product connection of 2nd vApplyHD (utilizing CAN hub)

Black connector - Row CAN
jumper to 1st product HD
(i.e. 729482)



729500 CAN
hub

Brown connector – Row CAN
jumper to 2nd product
vApplyHD (i.e. 729484)

vApply Rate Control Module Installation

All vApplyHD systems should have a vApply Rate Control module installed. This module can control the speed of the liquid product pump if desired.

See the vApply rate control module installation manual (955872) for how to install the vApply rate control module. This document can be found at <https://cloud.precisionplanting.com/products/#product-21-installation-resources>

vApplyHD module installation

The vApplyHD module will measure and control the application rate of the liquid product being applied. vApplyHD modules when installed on every row will control the application rate on

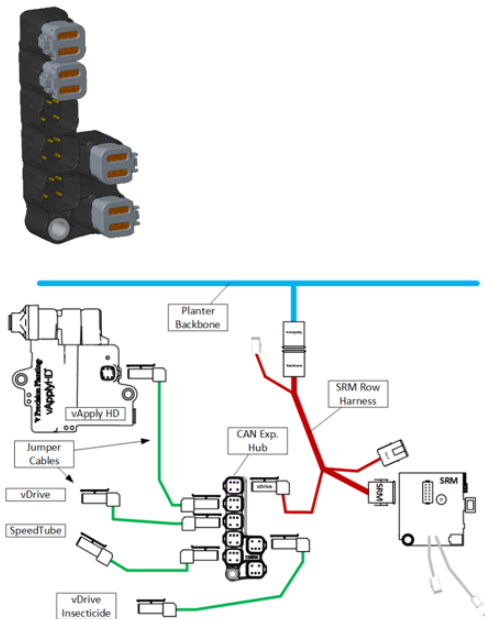
every row individually. The vApplyHD module can be plumbed directly to the application equipment and no orifice is required if there is only 1 application point after the vApplyHD module. If after the vApplyHD there is multiple application points (FurrowJet, Conceal, dual dribble, ect) then there should be a restriction device such as an orifice installed after the vApplyHD module. This orifice should be oversized so that the vApplyHD module can perform all rate control and the orifice simply balances the flow between the multiple application points. It is also possible to install vApplyHD modules to control sections of the implement. If this installation is chosen, there must be a device installed after the vApplyHD module (such as orifice plates) providing restriction to balance the flow between the application points. It is also recommended to install row by row feedback of flow rate by installing FlowSense on every row. **It is recommended to size any orifice plate located after a vApplyHD module at 1/2 of the intended system pressure.**

Instructions for installation of the vApplyHD modules can be found in the remainder of this document.

CAN Expansion Hub Installation

The CAN Expansion Hub was created in order to easily add multiple SRM based products to a single row unit. This creates one clean and convenient location for each control products' CAN Jumper Cable to be plugged in. The wiring diagram below shows how to connect the SRM Planter Backbone harness, the SRM, the CAN Expansion Hub, and all the additional SRM control products on the row.

Note that the green jumper cables shown below contain a 90deg fitting on one end, and a straight fitting on the other end. These may be plugged in either direction and allows the cable to be flipped around for the best fitting clearance.



Installing The CAN Expansion Hub

The CAN Expansion Hub is designed to bolt directly to the face of an SRM (See mounting instructions below), however, it can be mounted anywhere that is convenient and does not require any special mounting orientation. We do suggest that the Hub is not installed with the plugs facing straight up as this could allow water to pool and cause corrosion. The following are a few of the most common mounting locations for the CAN Expansion Hub:

SRM: The most common location for the CAN Hub is directly on the SRM. Using the included bolt, remove the existing SRM mounting bolt and install the new bolt through the Row Unit, SRM, and Hub.

Note: This location maybe too tight on row units that have vSet Select installed as well.

Parallel Arms: another highly used location are the parallel arms on the row unit. Using the included zip ties, hold the Hub tight to the inside of the parallel arm and cinch in place. Choose the parallel arm that makes the installation the cleanest and most convenient.

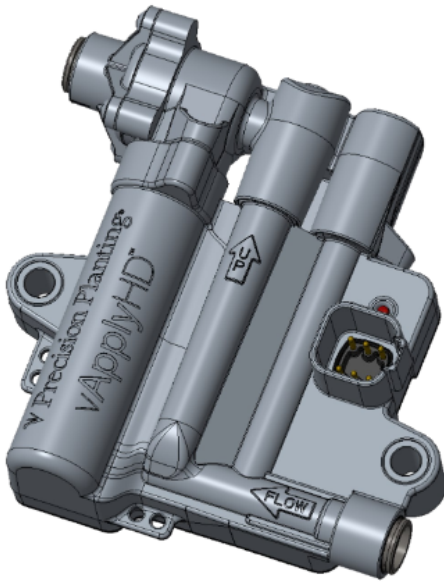
Note: Make note of any liquid products that may cause potential leaks and install accordingly.



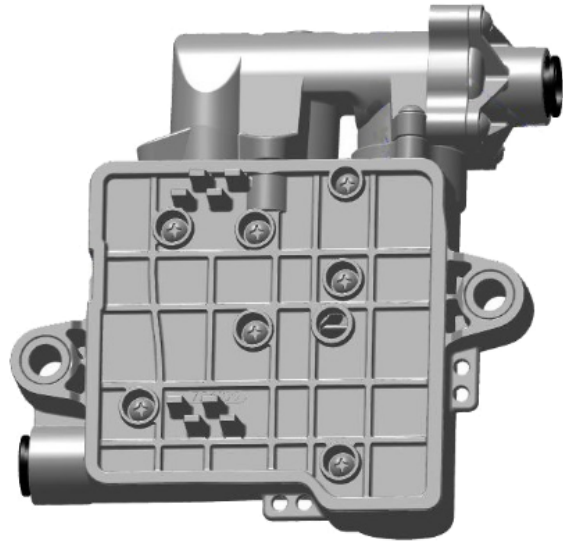
Row Unit Corner Post: Most vApplyHD Installations will have an SRM mounted to the right hand corner post and the vApplyHD module mounted to the left hand corner post. In the even that either one or both of these items has been mounted in another location, the CAN Expansion Hub can be installed on the corner psot. Use the included hex bolt to fasten the Hub to the corner post through an existing row unit bolt location.



vApplyHD Module Installation



vApplyHD Front View

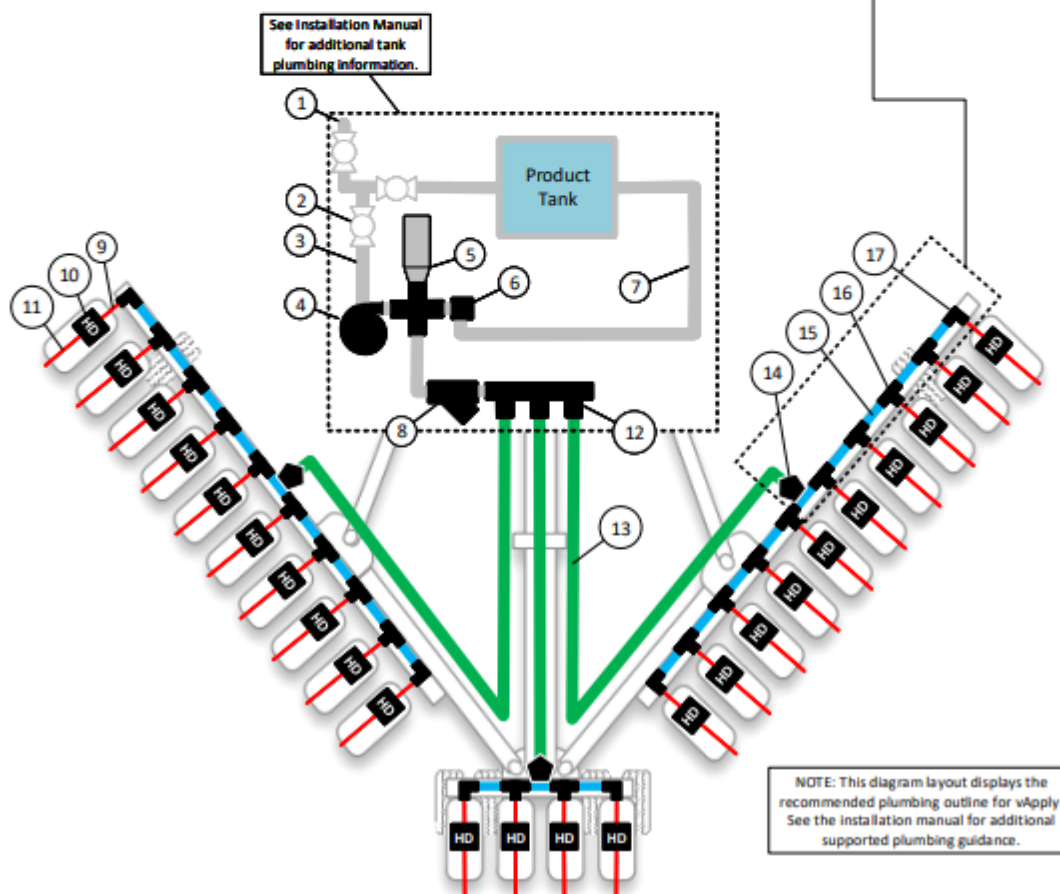
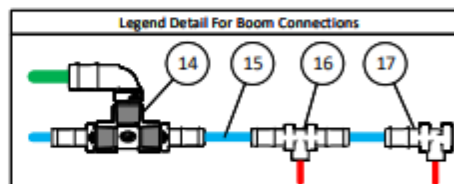


vApplyHD Rear View

JD 1770 NT 24 Row			
Item	Part NO	Description	QTY
1	Not a PP part	Product Input Line	Dist. from input coupling to tank
2	Not a PP part	Shutoff Valves	As Needed
3	Not a PP part	Pump Supply Hose	Dist. from tank supply to pump
4	Not a PP part	System Pump	Size at 110% of max. GPM needed
5	724288*	Accumulator	1
6	724288*	Pressure Relief Valve	1
7	724033	1" Return Hose (50ft Roll)	Dist. from #6 back to product tank
8	724289 724291	Strainer Kit	1
9	Order Guide	3/8" PTC row tubing	Estimate 5-6ft. Per row
10	724100	vApplyHD Module	One per row
11	Order Guide	3/8" PTC discharge tubing	Included in #9 estimate

* Items 5 & 6 are part of the Plumbing Essentials Kit when ordered

Section Plumbing Kit Overview (Per Section Kit)			
Note: Order <u>three</u> Section Kits and the necessary lengths of Section and Boom Hose for your setup.			
Item	High Flow (724065) Greater than 15GPA	Low Flow (724083) Less than 15GPA	QTY
12	2" Manifold Section	1" Manifold Section	1
13	1" Section Hose	3/4" Section Hose	Order separately
14	1" supply to 3/4" Boom Tee	3/4" supply to 1/2" Boom Tee	1
15	3/4" Boom Hose	1/2" Boom Hose	Order separately
16	3/4" Boom x 3/8" PTC Tee	1/2" Boom x 3/8" PTC Tee	6
17	3/4" Boom x 3/8" PTC 90deg	1/2" Boom x 3/8" PTC 90deg	2



System Installation

To prepare for installation ensure that there is a vApplyHD module and Mounting Hardware for each row.

While the vApplyHD modules should be mounted vertical, angles of +/- 10-15 degrees will not cause any issues. Corner posts, row unit panels, and parallel arms are the recommended mounting locations for the most accurate performance.

If the recommended mounting location does not work, a 3/8" hole can be drilled in a spot where the vApplyHD can be mounted.

There are many optional mounting brackets available for the vApplyHD modules (Part numbers for the various mounts range from 724359–724363)

To assist with the mounting of the vApplyHD, there are clocking tabs on the back that can be removed to ensure that the vApplyHD is mounted securely. Only remove tabs if needed.

Step 1:

Remove the bolt on the left hand row unit corner post.



Step 2:

Using the supplied bolt, nut, washer, and lock washer, mount the vApplyHD inside of the left hand corner post, using the same hole that the bolt was removed from in Step 1. Mount the vApplyHD using the hole nearest the product input point. the vApplyHD row unit.

Note: Before tightening the nut down, make sure there is clearance to insert the tubing on both the IN and the OUT. If the row unit interferes, it may be necessary to plug the included 90deg PTC connector prior to securing

**Step 3:**

Use the necessary length Row CAN Jumper Cable and plug the vApplyHD into the Row CAN Expansion Hub. See Row CAN Expansion Hub Installation Section for more information.



Left Row Unit Panel — vApplyHD Installation

Step 1:

For row units with side panels, there are several mounting locations that may be used. Depending on additional equipment on the row unit, find the most accessible location to mount the vApply HD module. Several hole locations from previously removed mechanical hardware should be available.

Step 2:

Using the supplied bolt, nut, washer, and lock washer, mount the vApplyHD inside of the left hand corner post, using the same hole that the bolt was removed from in Step 1. Mount the vApplyHD using the hole nearest the product input point.

Note: Before tightening the nut down, make sure there is clearance to insert the tubing on both the IN and the OUT. If the row unit interferes, it may be necessary to plug the included 90deg PTC connector prior to securing



Step 3:

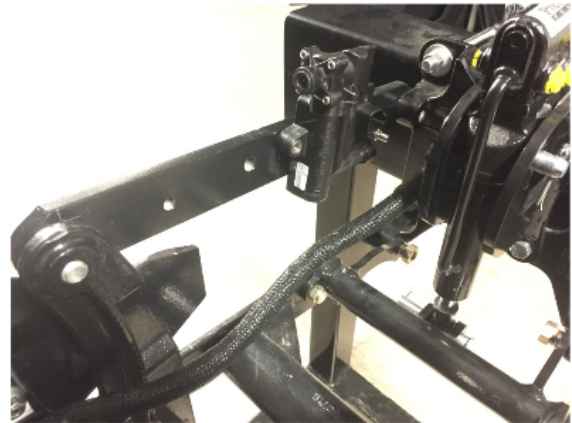
Use the necessary length Row CAN Jumper Cable and plug the vApplyHD into the Row CAN Expansion Hub. See Row CAN Expansion Hub Installation Section for more information.



Parallel Arms — vApply HD Installation

Step 1:

For row units that have no room on the corner post or side panel, use the parallel arm as a mounting location.



Step 2:

Using the supplied bolt, nut, washer, and lock washer, mount the vApplyHD inside of the left hand corner post, using the same hole that the bolt was removed from in Step 1. Mount the vApplyHD using the hole nearest the product input point.

Note: Before tightening the nut down, make sure there is clearance to insert the tubing on both the IN and the OUT. If the row unit interferes, it may be necessary to plug the included 90deg PTC connector prior to securing



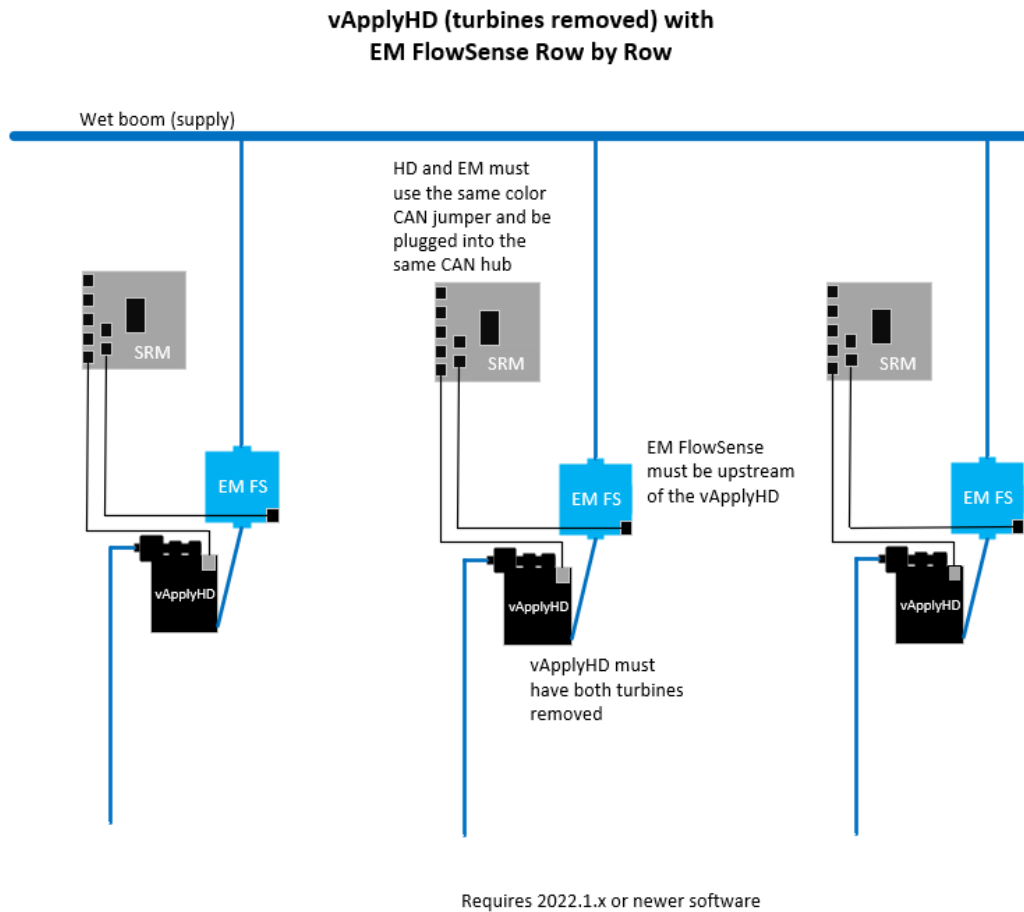
Step 3:

Use the necessary length Row CAN Jumper Cable and plug the vApplyHD into the Row CAN Expansion Hub. See Row CAN Expansion Hub Installation Section for more information.



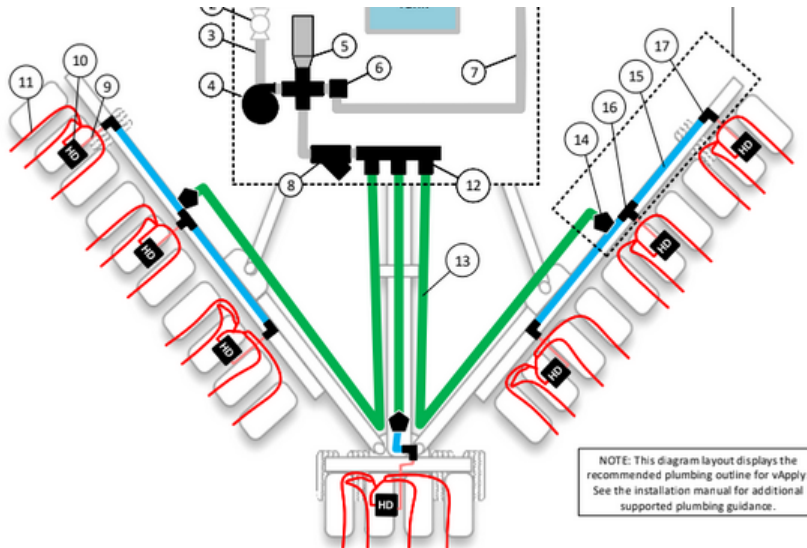
vApplyHD (turbines removed) with EM FlowSense for control feedback — Row by row system

Follow the diagram below for installation of vApplyHD (turbines removed). This system requires a Gen3 20|20 monitor with 2022.1.x software or later.



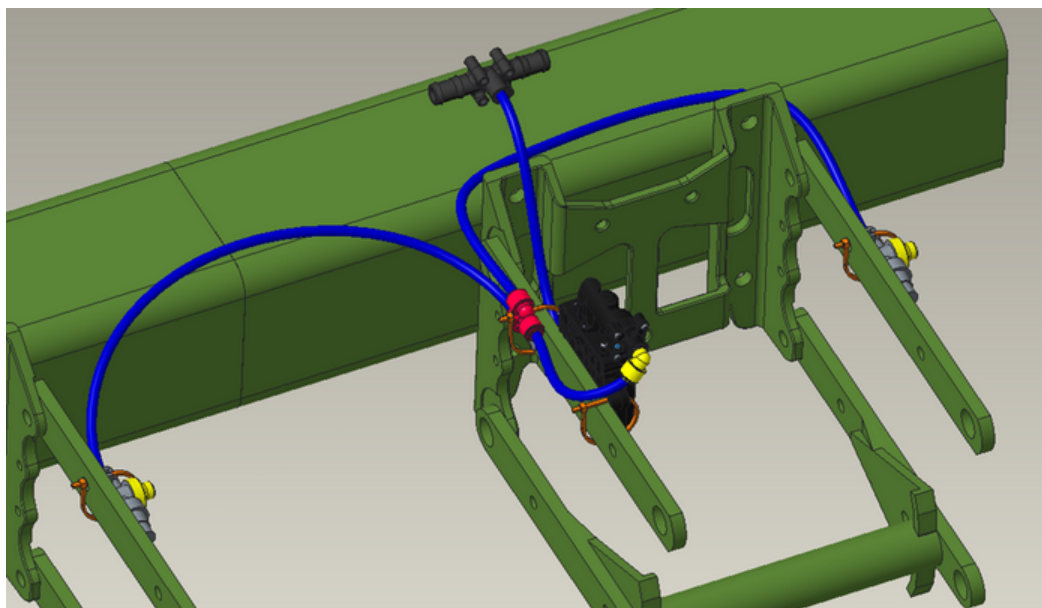
vApplyHD Section Control Installation

Prior to installation, plan out how many rows and which rows each vApplyHD will be supplying. Remember to plan for frame sections and fold points to keep all of the rows in the vApplyHD Section on the same frame section. This will insure that you do not have large row variations caused by unequal plumbing around fold points. See the example below.

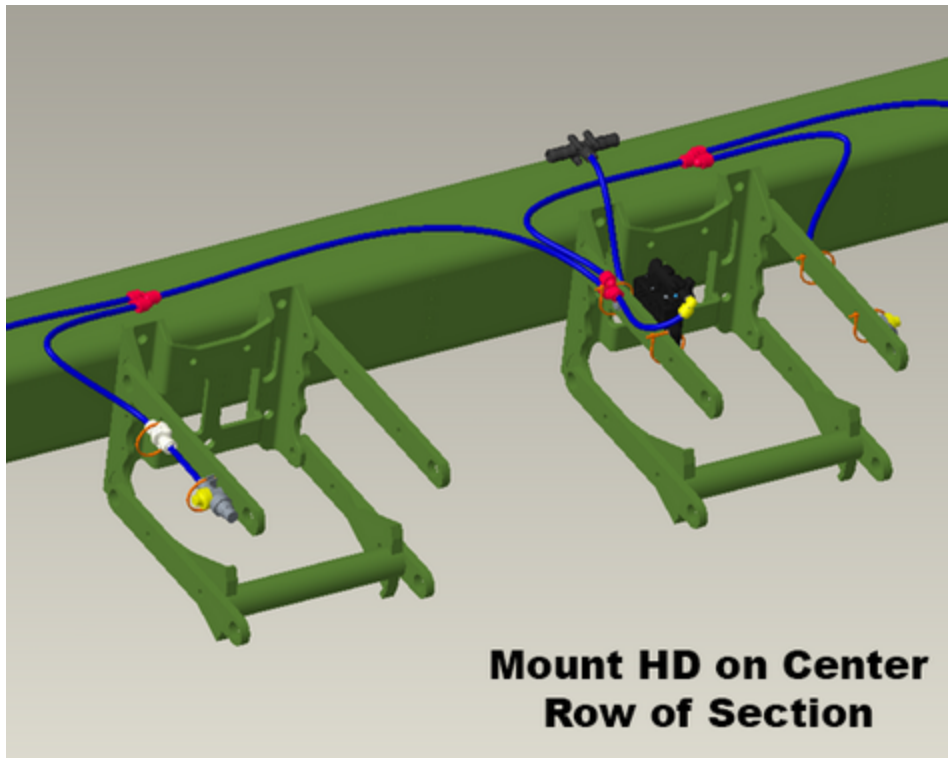


Note: Remember to use symmetrical plumbing to all rows in a single section to make sure that each row gets an equal distribution of product from the controlling vApplyHD.

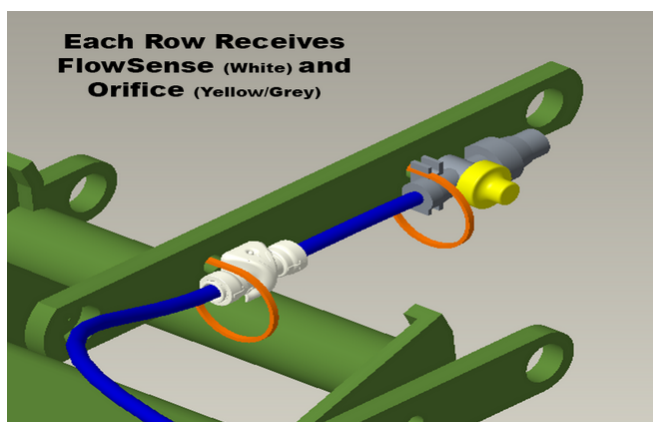
We recommend mounting the vApplyHD on the middle row of the section and routing the outlet tubing back to the toolbar as shown below. This will allow you to then split and divide tubing off to the rest of the rows in that section.



Use PTC flow “dividers” or “splitters” like the 724232 or 724089 to split the output of the vApplyHD into enough supply lines for your section.



Every row in a section will need a FlowSense module to monitor individual row feedback and record applied data as well as an orifice plate or tubing to provide equal distribution of product to each row. (see Online Order Guide for information about AUX and CAN FlowSense).



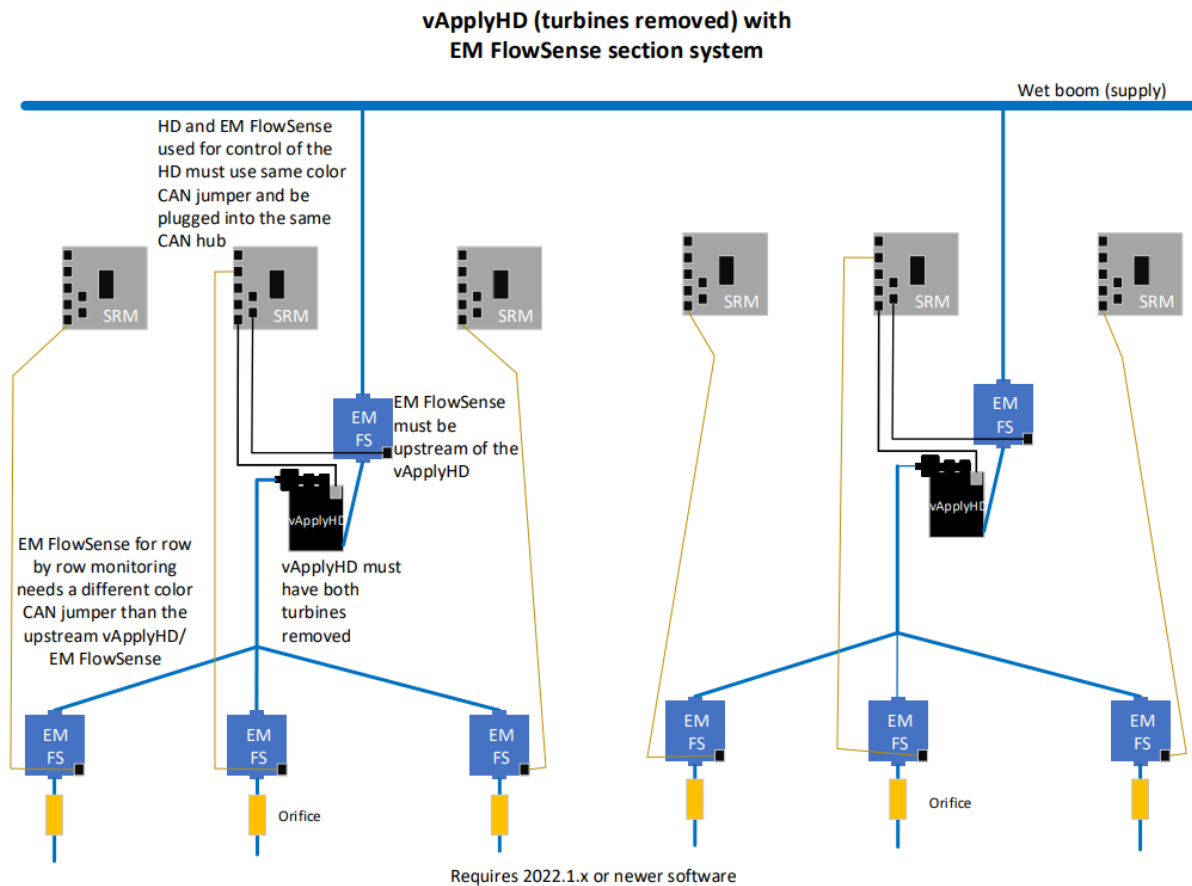
As seen in the image above, we recommend installing the FlowSense prior to the orifice and check valve. This will prevent “dribbling” of product when not applying and provide a crisp map of the recorded data.

Note: The orifice is used to help balance row to row distribution of product from the controlling vApplyHD. We recommend sizing your orifice based on your maximum rate, fastest planting speed, AND size the orifice at 1/2 of the intended system operating pressure, therefore the vApplyHD can control the rate and the orifice only provide pressure to balance across application points. Also the orifice will need to be oversized to account for the thickness of the fertilizer. This could be 0%-15% for very thin products such as nitrogen, or 15%-30% or more for thick products like starter.

vApplyHD (turbines removed) with EM FlowSense for control — Section system

This requires a Gen3 20|20 monitor with 2022.1.x software or newer.

The following diagram should be followed for section systems using vApplyHD (turbines removed)



Additional CAN Sequential Details (Gen2 monitors ONLY)

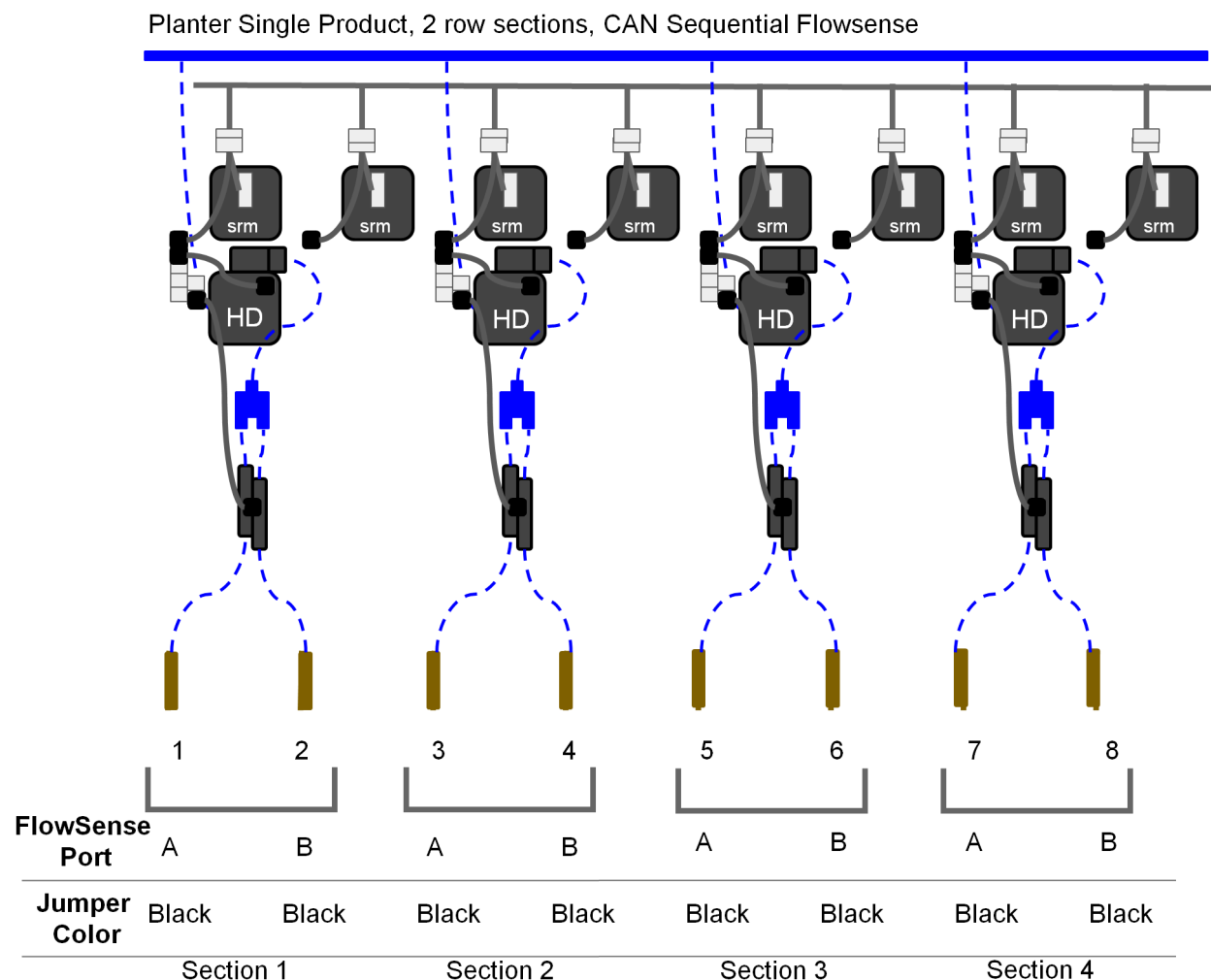
CAN Sequential Mode can be used in the vApplyHD Section setup to assign a CAN FlowSense port (either A or B) to a row that FlowSense is not plugged into. CAN Sequential Mode is only supported for vApplyHD Section control and can only support up to four rows per section.

FlowSense **MUST** always be plugged in to the same SRM as the vApplyHD it is monitoring. This may result in some FlowSense ports not being used.

With CAN Sequential Mode, the black CAN jumpers will plug into FlowSense for the first two rows in each section, and the brown CAN jumpers will plug into FlowSense for the second set of rows (3–4).

FlowSense CAN Sequential 2 Row Sections

FlowSense port A will automatically assign to the first row in the section and port B will automatically assign as the second row in the section. Refer to the diagram below for a basic 2 rows per section setup.



FlowSense CAN Sequential Mixed Row Sections

If FlowSense is being used with CAN Sequential mode in the 2020 SeedSense display, FlowSense **MUST** be plugged in to the same SRM as the vApplyHD it is monitoring.

Rows 1 and 2 of each section will be plugged into the FlowSense using a **black** CAN Jumper. (ports A/B respectively)

Rows 3 and 4 of each section will be plugged into the FlowSense using a **brown** CAN Jumper. (ports A/B respectively)

Note: In the below example the section one, brown jumper FlowSense port 'B' cannot be used for row 4 because it is not connected to the same SRM as the Second Section's vApplyHD module.

