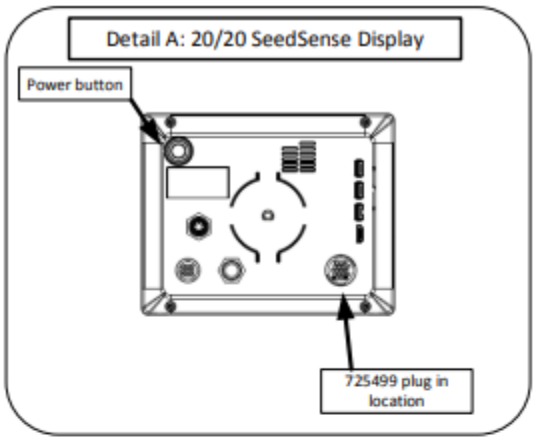
SRM Base Installation Guide

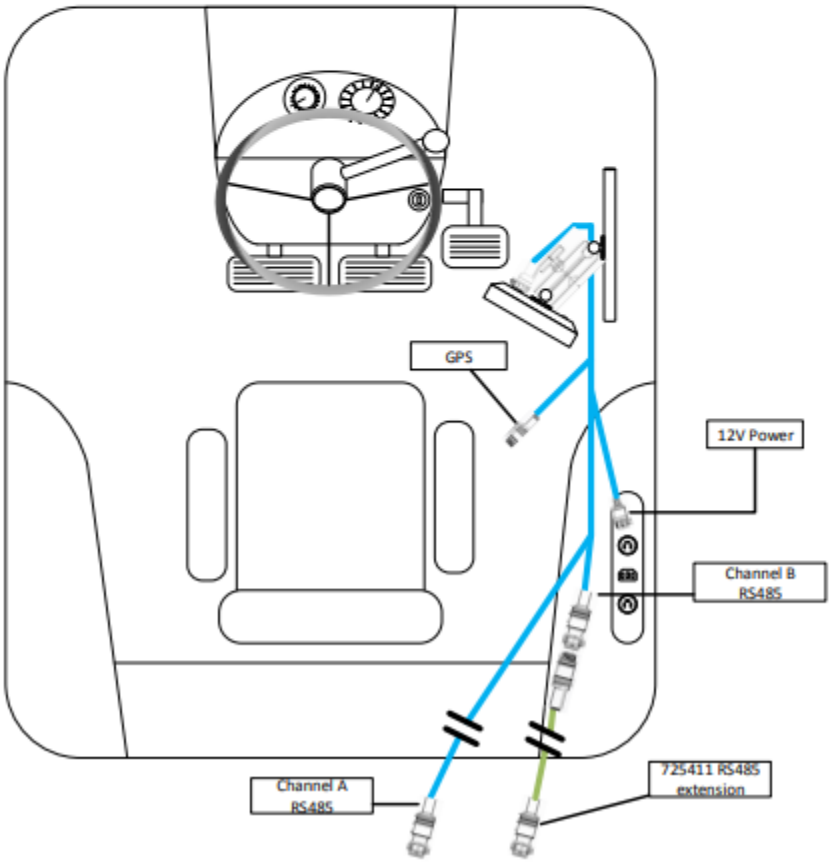
Precision Planting®

Contents

20/20 Cab Installation (Gen 2)



20/20 SeedSense Monitor			
Item	Part NO	Description	QTY
1	725843	20/20 SeedSense Display (iPad ready)	1
2	725499	Universal Tractor Harness	1
3	725411	RS485 extension (channel A/B)	1
The monitor mounting location will vary from tractor to tractor			
Note A: There are several mounting options available for the monitor, the option shown below is a RAM mount			
Note B: Adapters may be needed for GPS and 12V power depending upon make/model of tractor and brand of GPS			
Note C: When needed, the RS485 extension for Channel B is included in the finishing kit, and is only necessary for systems with two Smart Connectors			



Step 1:

Install the 20/20 Display Unit in the cab of the tractor. Mounting locations will vary from tractor to tractor. There are several mounting options available for the 20/20. The diagram to the right depicts the 20/20 with a RAM mount.

Step 2:
Install the Cab Control Module (CCM) to the 20/20 SeedSense.

Step 3:
Connect the 725499 or 725439 SRM Base Tractor to the 20/20 Display Unit.

Step 4:
Connect the 725499 or 725439 SRM Base Tractor Harness to the power source in the cab.

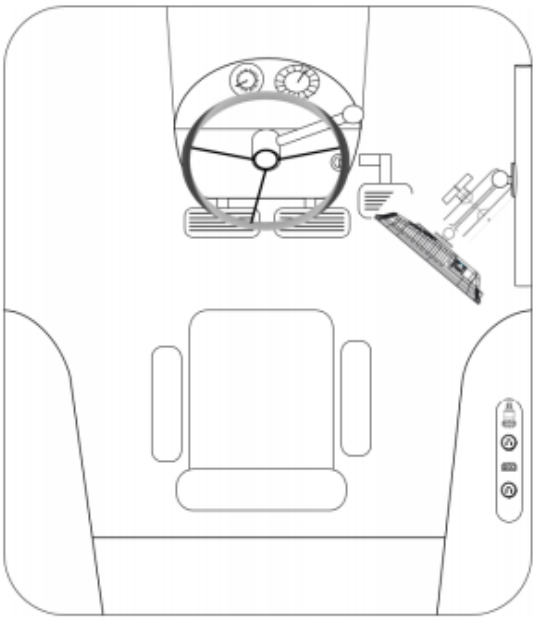
Step 5:
Connect the 725439 or 725499 harness to a GPS adaptor to tie into a 5 hz GPS system. See the GPS setup guides in the Tech Docs section of cloud.precisionplanting.com for specific instructions for connecting and configuring GPS.

Step 6:
Route the remaining length of the cable through the cab harness port in the back window. The section of cable that is routed through cab harness port will have two connectors. One connector is a 4-pin Deutsch.

20|20 Cab Installation (Gen 3)

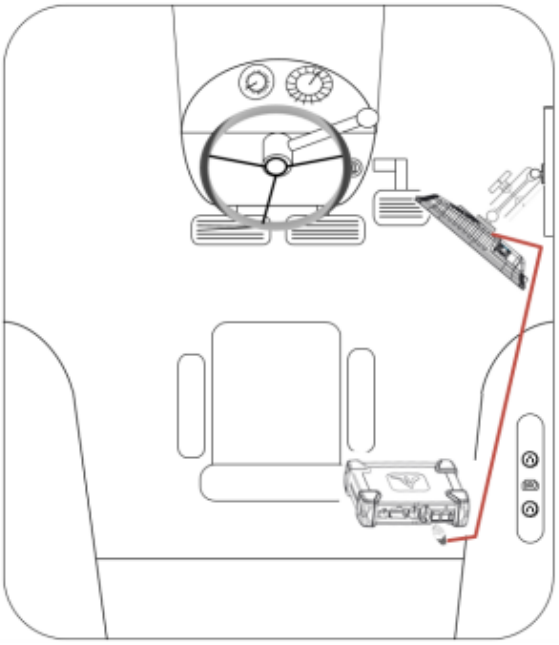
Step 1:

Mounting locations will vary from tractor to tractor. Mount the display or both displays for optimal visibility and interaction for the operator. There are several mounting options offered by Precision Planting available for the display. The diagram depicts the display with a RAM mount.



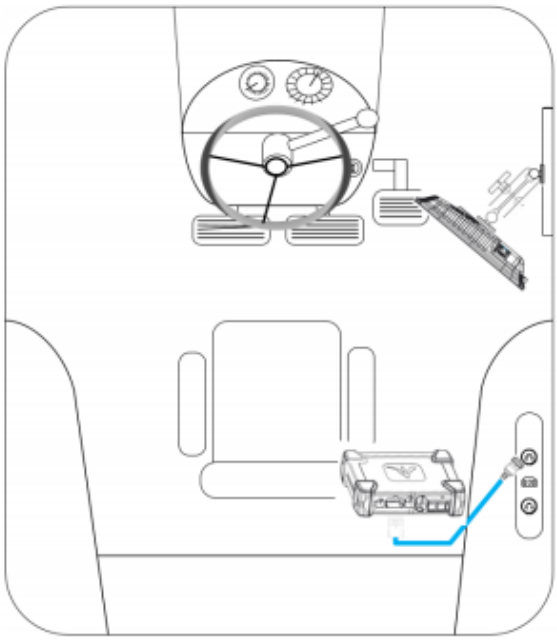
Step 2:

The Display Base Module [DBM] can be located in any convenient area of the cab. Ensure the DBM will not move around when operating the tractor. Plug one end of the provided Ethernet cord into either port on the front of the DBM and the other end into the back of the display. If using two displays connect the second display with the provided Ethernet cable to the other open port on the DBM.



Step 3:

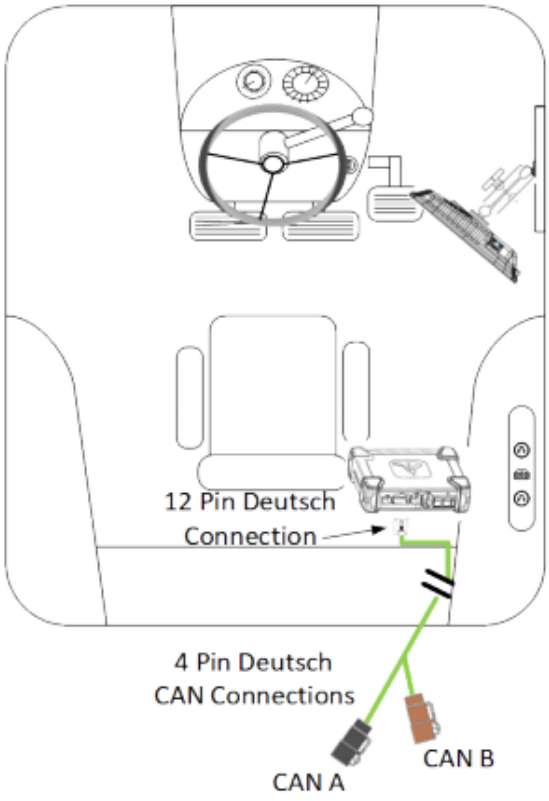
Connect the 725150 Power Harness to the DBM into the 4-pin Deutsch Connector on the DBM and then to the power source in the tractor cab. A three pin round convenience port connector is provided to plug directly into a standard convenience port. Various adapters are available to connect to different types of power ports.



Step 4:

Connect an Implement CAN Harness into the 12-pin Deutsch Connector on the DBM. Route the remaining length of the cable through the cab harness port in the back window. There will be two CAN connections on the harness, CAN A (black connector) and CAN B (brown connector). If a PDM is installed, CAN A must be used and routed to the PDM. If no PDM is installed, (i. e. Smart Connector only system) then CAN B must be used.

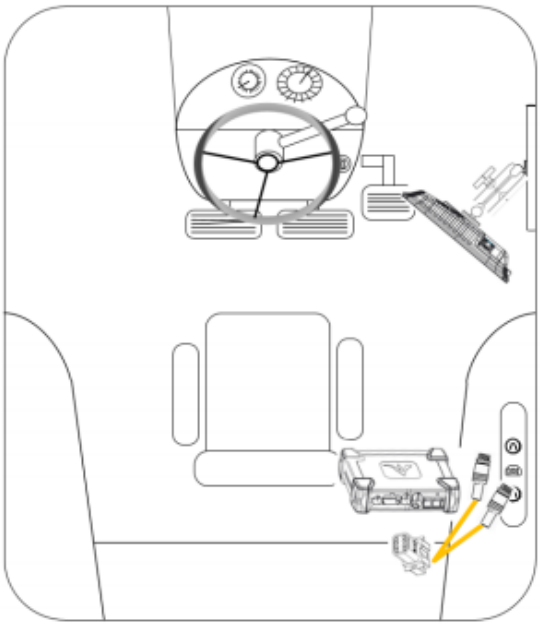
Note: The 725935 Sensor CAN harness will only have a CAN B connection present.



Step 5:

Connect the 725155 Speed Harness to the 8-pin Deutsch connector on the DBM. This will provide you with two 4-pin round connections. The male pin connector will connect to the GPS adapter, while the female pin connector will connect to the Radar adapter.

Note: If this system is being used for Sensing only with a 725939 5Hz GPS Hockey Puck, the 725155 adapter is not necessary. The 725939 harness will plug directly into the 8–pin Deutsch connector on the DBM.



Tractor Power Harness Install (729157)

The tractor power harness is used to provide 12 volt power from the tractor batteries the SRM system.

Step 1:
Install the 729157 Tractor Power Harness to the tractor battery. Ensure that the red terminal is connected to the positive post on the battery. Ensure that the black terminal is connected to the negative post on the battery.

Step 2:
Route the 729157 Tractor Power Harness to the hitch of the tractor.

Step 3:
Remove the 729147 CAN Terminator from the 4-pin at the end of the 729149 SRM CAN Tractor Harness. The 729147 CAN Terminator will be used later to complete the CAN network.

Step 4:
Connect the 4-pin Deutsch on the 729149 SRM CAN Tractor Harness to the 4-pin Deutsch on the 729157 Tractor Power Harness.

Note: This will combine power and CAN into a single Deutsch connection on the hitch.

Step 5:
If installing RowFlow, remove cap from 9-pin Amp connector on the 729149 SRM CAN Tractor Harness. Connect RowFlow CAN Extension to the 9-pin Amp connector on the 729149 SRM CAN Tractor Harness. If not installing RowFlow, keep the cap on the 9-pin Amp connector and cable tie the pigtail to the side of the 729149 SRM CAN Tractor Harnesss.

ISO Power Harness Install (729208)

An optional ISO power harness can be used in place of the Tractor Power Harness (729157). If the ISO power port is available on the tractor the ISO power harness can be plugged in to supply the necessary voltage to the PDM.

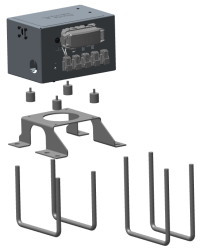
Power Distribution Module (PDM) Installation

Note: If an alternator is necessary, proceed to the alternator installation steps before installing the PDM. If an alternator is not necessary, proceed with the PDM installation.

Determine mounting location for PDM. Mounting location should be on the left section of the planter if possible. The PDM must be flat and have the decal facing up within 15 degrees. If DeltaForce will be installed, the Lift Manifold for DeltaForce must be within three feet of the PDM. A 10’ foot Lift Manifold Extension (729256) is available for installations if the lift manifold can not be mounted within 3 feet.

Step 1:

Use the provided hardware and bracket to mount the PDM. The hardware will allow mounting to a 7X7 inch frame or a 5X7 inch frame.



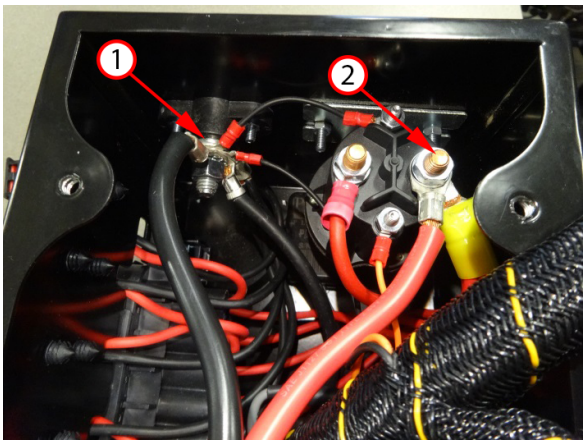
Note: If necessary, a plate can be fabricated to mount the PDM in a safe location. The PDM must be rigid. The PDM must remain flat on the surface of the plate or the planter bar.

Alternator Installation (If Applicable)

The alternator is required for all systems that have a total amp draw of 40 amps or more. Use the Alternator Power Table, found in the order guide, to determine the total current draw based on the products installed and number of rows.

Step 1:

Connect the power harness that is supplied with the alternator to the PDM. Route the “red” power wire to the output side of the solenoid labelled “2”. The input side of the solenoid will be closest to the ground terminal. Route the “black” ground wire to the ground stud labelled “1”.



1. Ground Terminal

2. Output Terminal

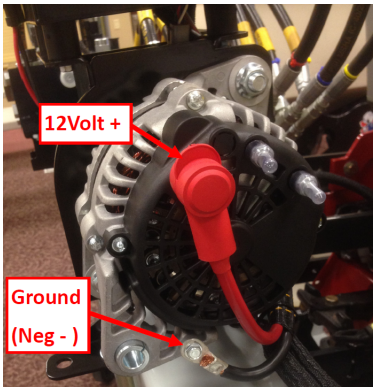
Step 2:

Install the PDM on top of the alternator with the supplied brackets and hardware. Ensure that the isolation mounts are utilized. Refer to Illustration 15.

Note: Do not over tighten the bolts that secure the isolation mounts to the PDM.

Step 3:

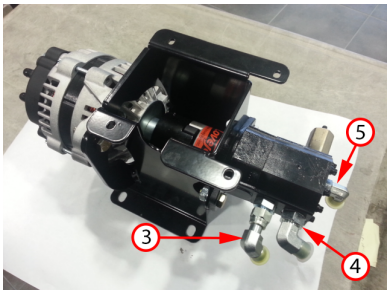
Connect the power harness to the alternator. Route the black ground wire to the ground stud. Route the “Red” power wire to the positive terminal on the alternator. Cover the positive terminal with the boot. Refer Illustration 16 below.



Step 4:
Install -6 (3/8”) hydraulic hose from the supply source to the pressure and return ports on the alternator motor. Refer to Illustration 16.

Note: If DeltaForce is installed, route the supply hoses to one of the output faces on the DeltaForce Lift Manifold. Refer to the DeltaForce Hydraulic System Overview.

Step 5:
Connect the 3/8” case drain line on the alternator to the closest case drain line. The case drain line must be a -6 (3/8”) hose that is returned back to the tractor. (if less than 3 products, if you have 4 products install a 1/2in line). If a case drain line is not accessible, install a separate -6 (3/8”) case drain line to the tractor.



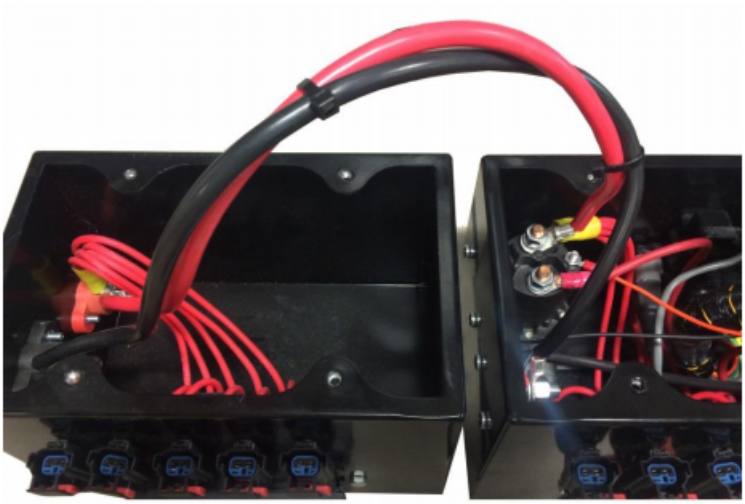
3. Return Port (Out)

4. Pressure Port (In)

5. Case Drain Port

Secondary PDM Installation

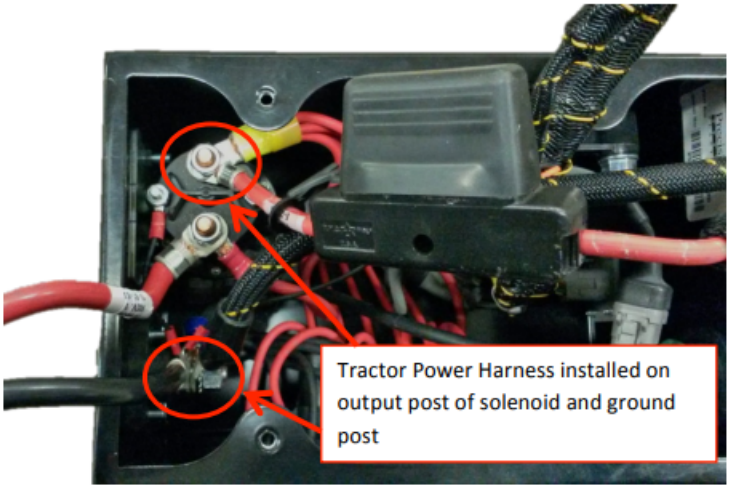
Step 1: Connect the Power wire (Red) from the secondary PDM to the output side (5 wires) of the solenoid in the first PDM. Then connect the ground wire (Black) from the secondary PDM to the common ground post in the first PDM.



(Secondary PDM connected to Primary PDM)

Secondary Alternator Installation

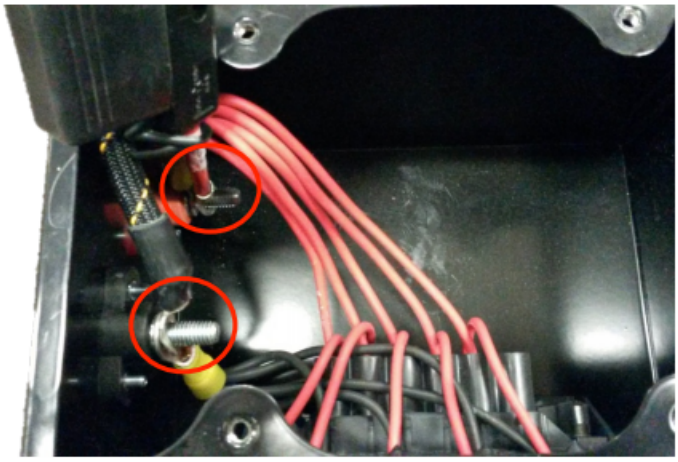
Step 1: Install a tractor power harness to the output side of the solenoid and the ground post in the primary PDM. Route the harness across the planter toward the secondary PDM.



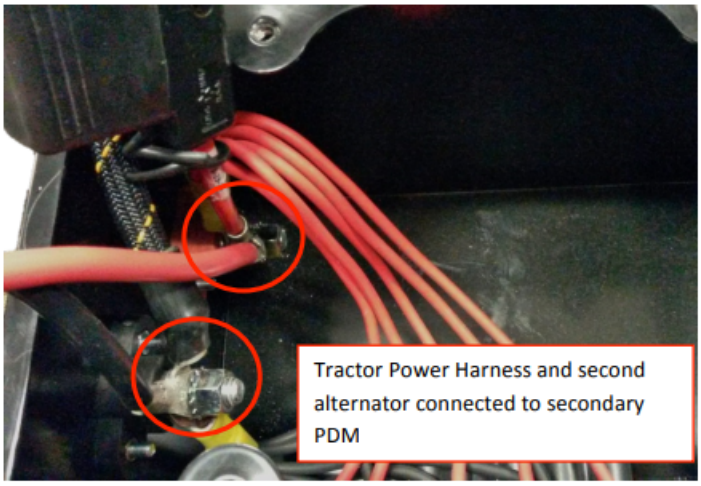
Step 2: Connect the tractor power extension harness to the opposite end of the tractor power harness installed in step 1. Tractor power extension orientation is not specific in this instance.

Step 3: Connect the remaining tractor power harness to the open connector on the tractor power extension. Route harnessing to secondary PDM.

Step 4: Install the ring terminals on the tractor power harness to the corresponding posts in the secondary PDM. Do not re-install the lock nuts.



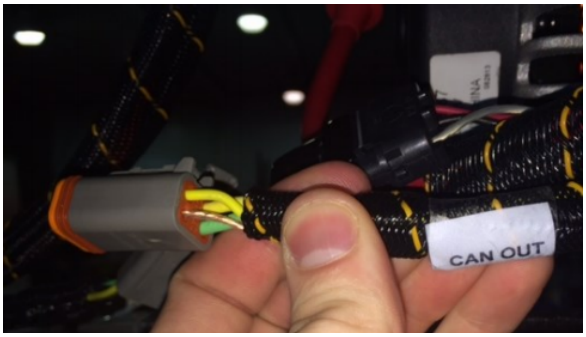
Step 5: Mount the second alternator within 3 feet of the secondary PDM and connect the power harness included with the secondary PDM to both the secondary PDM and alternator. Reinstall each lock nut to the power and ground post.


Tractor Power Harness and second alternator connected to secondary PDM

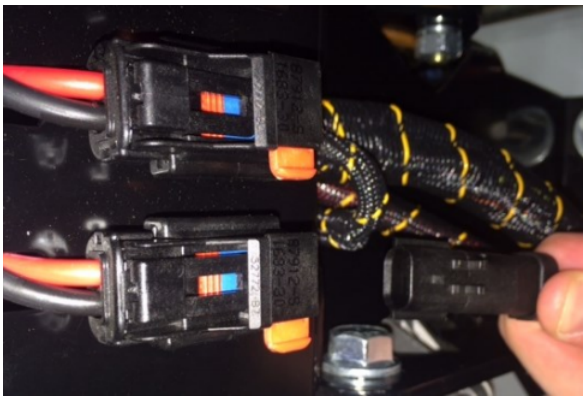
SRM CAN Booster Installation

Note: The 729250 SRM CAN Booster Kit only needs to be installed on planters with more than 130 feet of total CAN wiring to prevent the intermittent loss of communication packets.

Step 1: Disconnect the CAN OUT connection from the PDM Harness and insert the CAN connector of the 729253 SRM CAN Booster Harness in line.



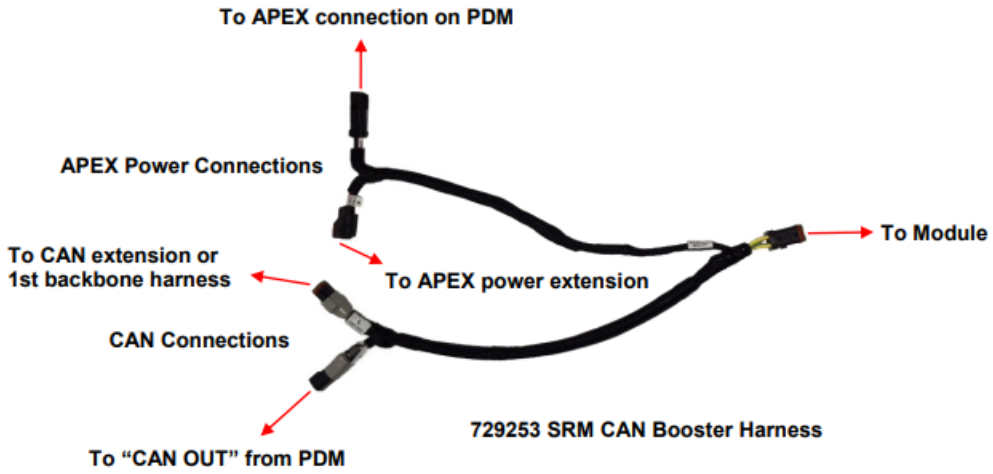
Step 2: Disconnect one of the 2 pin APEX Backbone power connections and insert the two pin power connector of the 729253 harness in line.



Step 3: Mount the 729251 bracket between the PDM and the PDM mounting bracket, utilizing the PDM mounting bolts. It should be mounted on the side opposite the fuses. If the PDM is mounted above an alternator, the module bracket can be mounted either above or below the isolation mounts.

Step 4: Install the 729254 module to the bracket using the supplied hardware. Plug the 12 pin Deutsch connection on the harness into the module.

Note: If space around the PDM is limited, the module may be zip tied to the PDM harness inside the PDM. The bracket will not be used.



Note: The module will not be displayed on the 20/20 Diagnose pages.

Planter Harness Installation

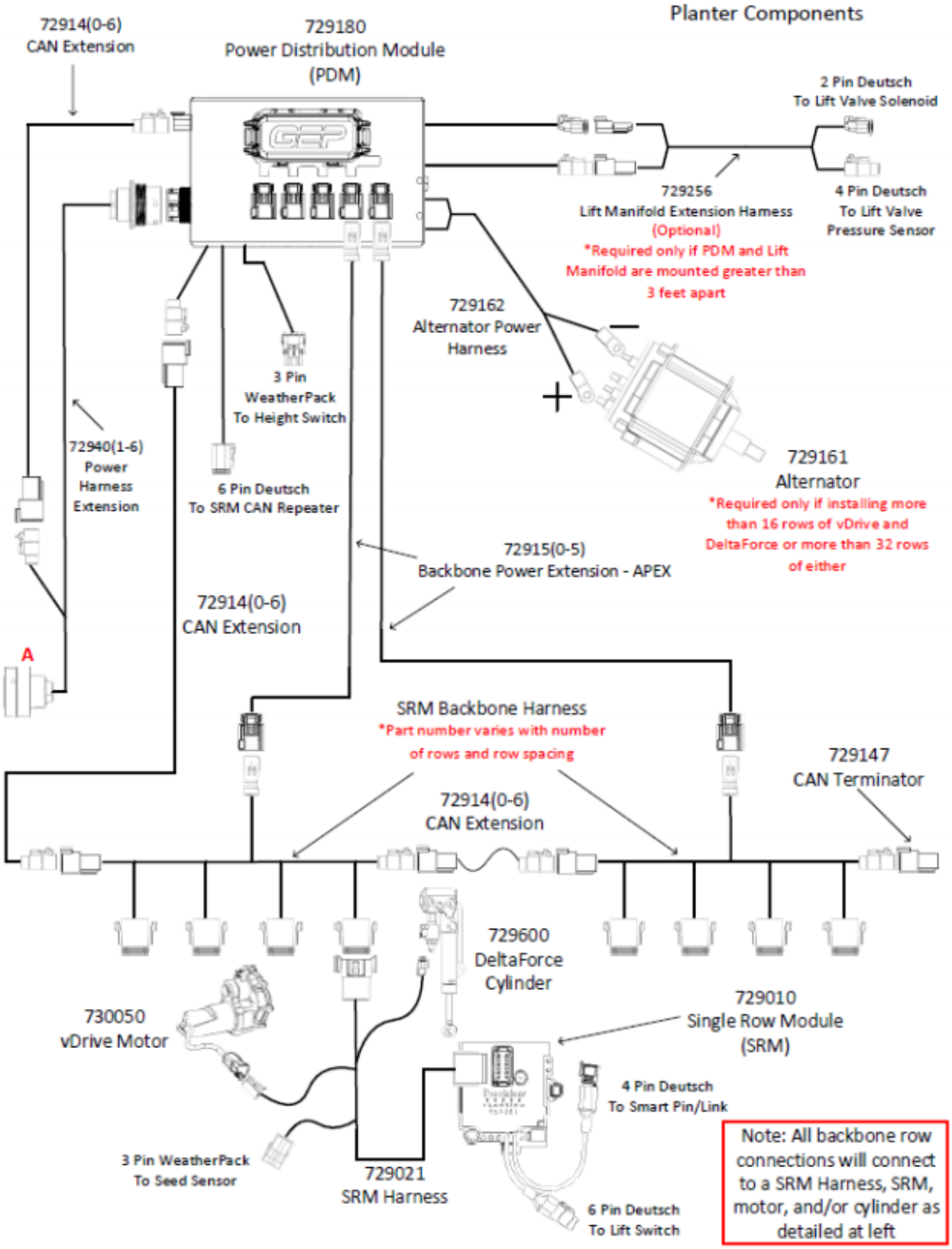
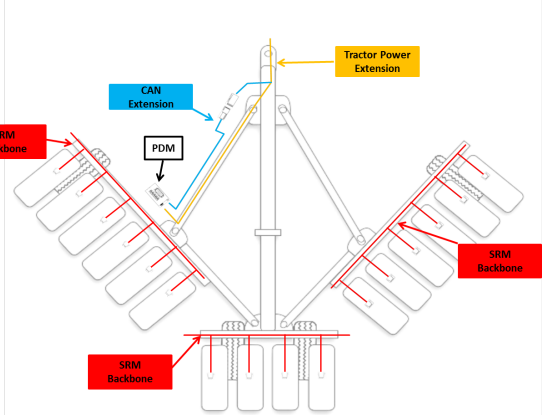


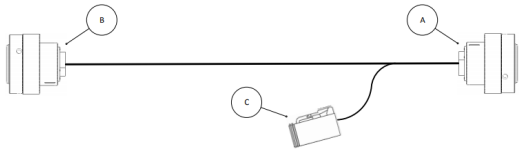
Figure 1.
Harness Overview

Step 1:

Use the 72941X Tractor Power Extension Kit to route CAN and Power to the PDM. Power will be routed through the 72940X harnessing. The SRM CAN Extension will be listed at 72914X. Both CAN and Power harnessing will be routed as separate harnessing along the planter beam to the PDM.



NOTE: If routing the 72940X Tractor Power Harness through the draft bar, it may be helpful to remove the Deutsch Power Connector. Use the 729197 Deutsch Power Connector Removal Tool to remove the connector. Ensure that the ends of the wires are adequately taped to prevent contamination.



VIEW A

A - Tractor Power Harness Connector			
Deutsch 6 Pin Round Plug			
Pin	Function	Color	To
1	CAN HI	Yellow	C1
2	CAN LO	Green	C2
3	Power (12V)	Red	B3
4	Ground	Black	B4
5	CAN Shield	-	C3
6	Key Switch	Orange	C4

VIEW B

B - PDM Connector			
Deutsch 6 Pin Round Plug			
Pin	Function	Color	To
1	-	-	-
2	-	-	-
3	Power (12V)	Red	B3
4	Ground	Black	B4
5	-	-	-
6	-	-	-

VIEW C

C - CAN Connector			
Deutsch 4 Pin Plug			
Pin	Function	Color	To
1	CAN HI	Yellow	A1
2	CAN LO	Green	A2
3	CAN Shield	-	A5
4	Wake Up	Orange	A6

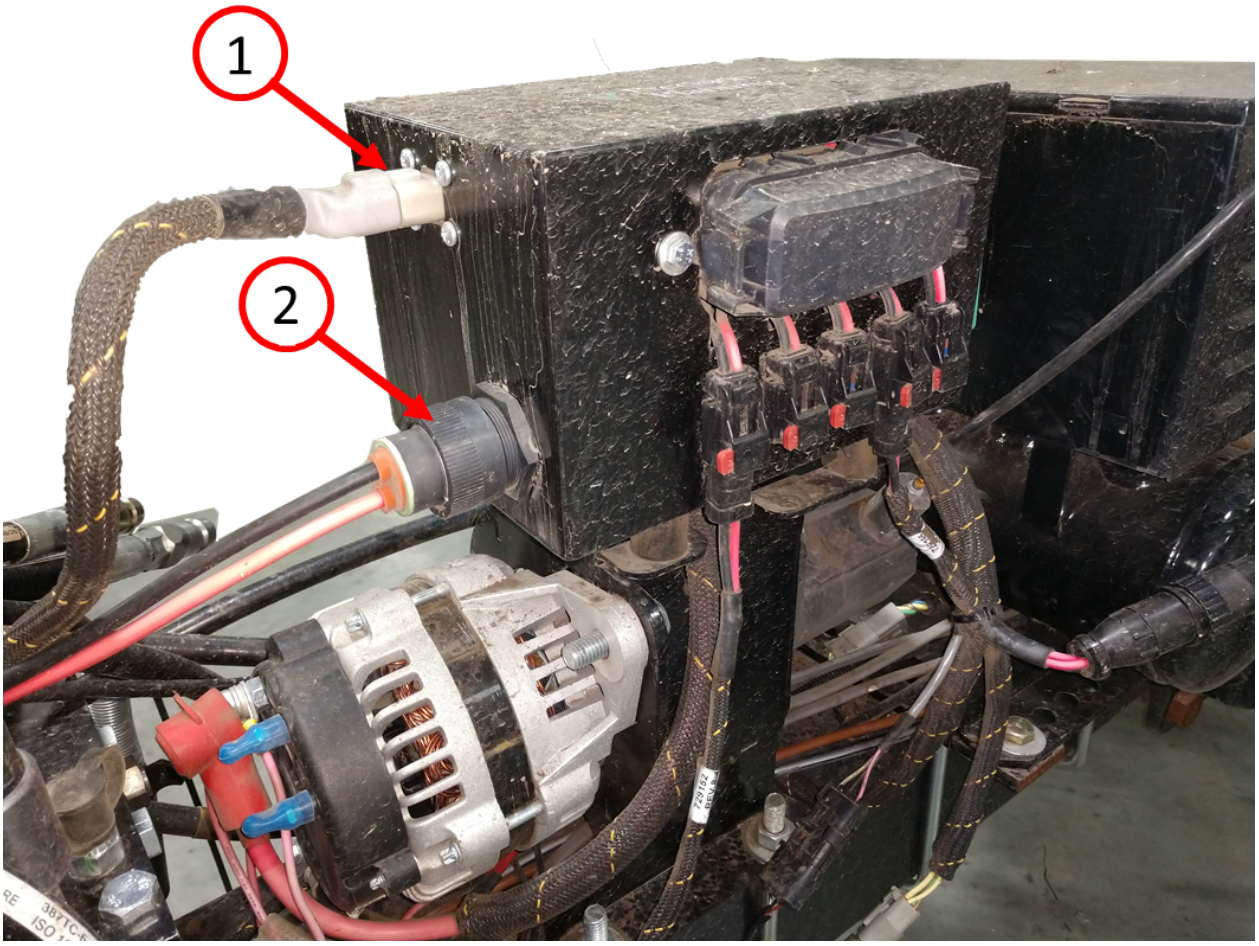


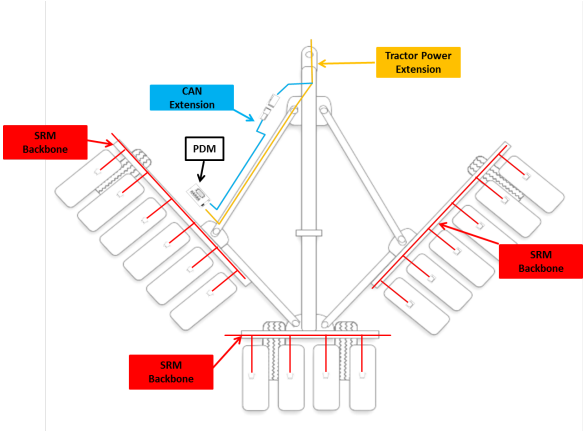
Figure 2.

Step 2:
Connect the 72940X Power Harness to the round 6-pin Deutsch connection (2) at the PDM.

Step 3:
Connect the 72941X SRM CAN extension harness to the 4-pin Deutsch connection (1) at the PDM.

Step 4:

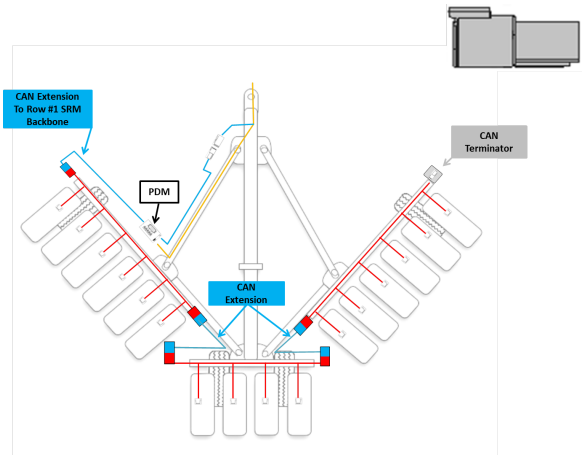
Route the SRM Backbone Harnesses across the planter frame sections. For frame sections that have more than 11 rows, additional backbones will be installed on that frame section.



Note: The first and last SRM Row connector on each end of the harness is marked "Left" or "Right." Orient the SRM Backbone Harness so that it is correctly installed on the planter bar. The orientation is as the operator is sitting in the tractor seat.

Step 5:

Install the 729147 CAN Terminator onto the last SRM Backbone Harness on the right most connector (CAN OUT).



Step 6:

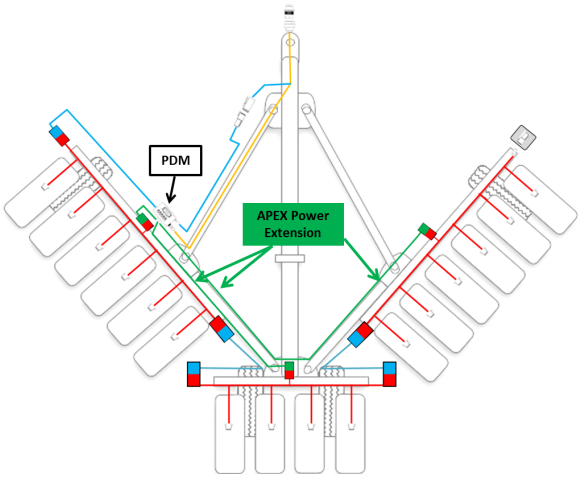
Install the 72914X CAN extensions.

a: One CAN Extension will go from the PDM connector labeled "CAN OUT" to the first backbone 4 pin connection labeled "CAN IN".

b: Install any remaining CAN Extension which may be required to go around any fold points.

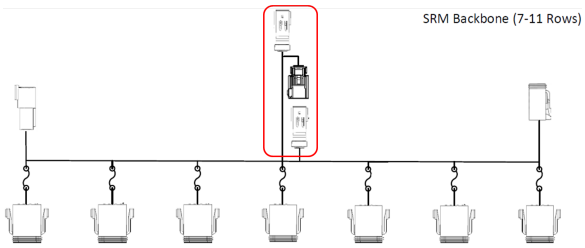
Step 7:

Each backbone requires its own 12 volt power supply from the PDM.



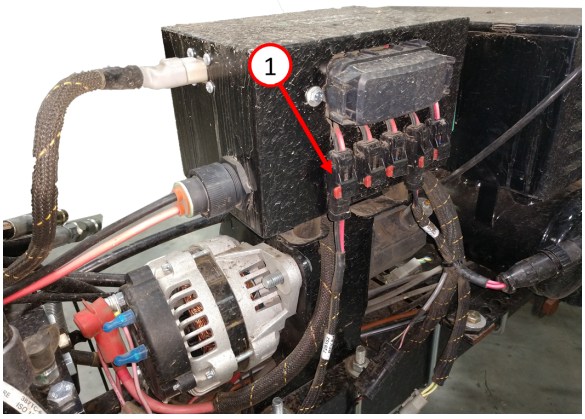
Step 8:

If installing a backbone with more than 7 rows **and** running SpeedTube it is required to run two Apex harnesses to that one backbone.



Step 9:

Plug one end into the Apex connector (1) at the PDM. Route the other end of the Apex extension to the center of the backbone harness and connector it.

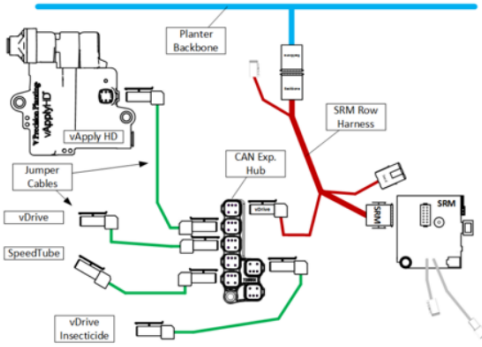


Note: 5 Apex power connectors are available on the PDM. If more than 5 are required a secondary PDM kit is required.

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 90 deg 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.

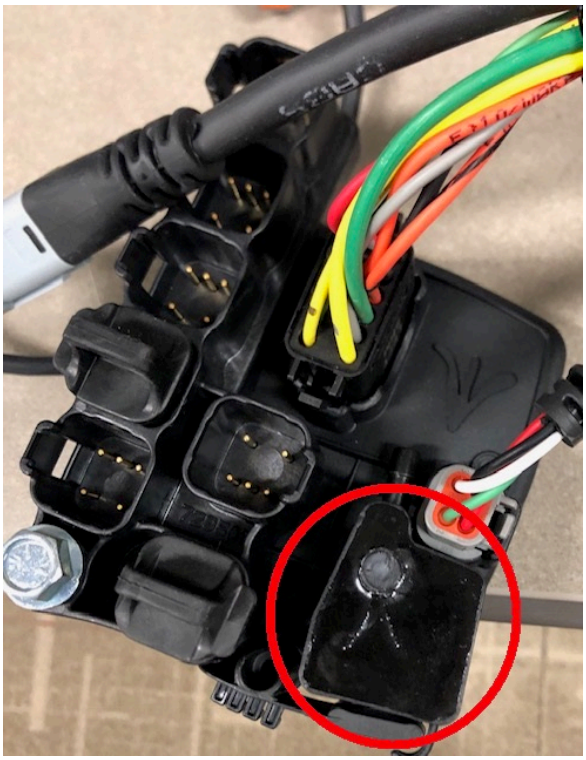
Row Unit Corner Post: Most vApplyHD Installations will have an SRM mounted to the right hand corner post and the vApplyHD module mounted to the left hand corner post. In the even that either one or both of these items has been mounted in another location, the CAN Expansion Hub can be installed on the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

SRM Sensor Installation

You will plug Vacuum sensors, Load Pins, AUX Flowsense, and some Lift Switches into the SRM itself. Use the images below to see how your sensor will be installed.

Vacuum Sensor

Install the vacuum sensor as show onto the SRM.

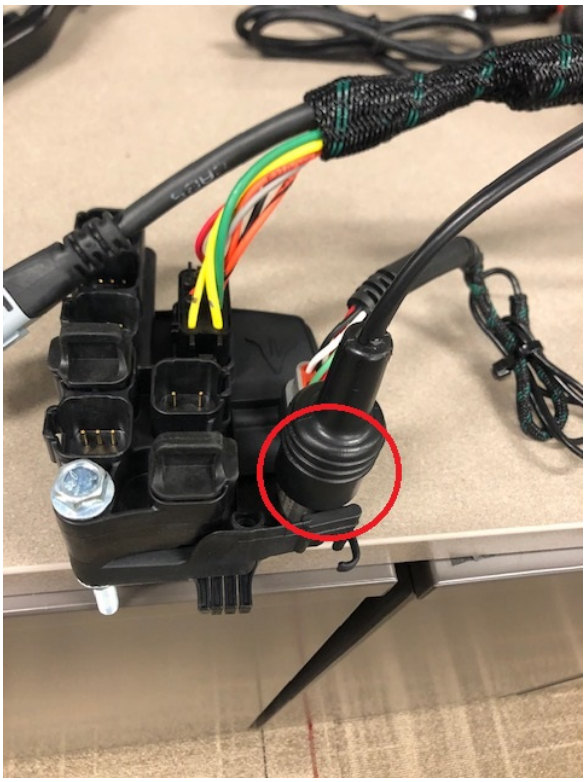


Load Pin

After routing the load pin harness through the row unit plug the 4 pin harness into in SRM as shown.

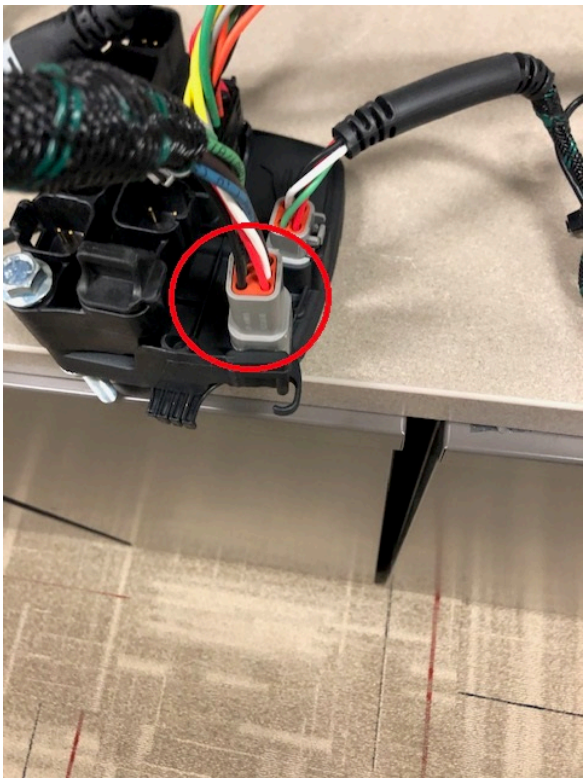
Push Button Lift Switch

After installing the push button lift switch on the row unit plug the 6 pin harness into the SRM as shown.



AUX Flowsense

After installing the AUX Flowsense on the row unit plug the 6 pin harness into the SRM as shown.



For more information on row unit specific installation of the SRM or sensors go to https://cloud.precisionplanting.com/products/#.

Welding on Planters

Because of the high current and voltage that welding creates and passes through a planter frame, there is potential that it can damage the electrical circuit boards of the 2020 display and implement mounted components. The importance of a properly located ground clamp is vital to safeguarding the electrical system. The ground clamp should be located as close as possible to the spot that is being welded, ground clamp should be located such that no electrical device is between the welding spot and the clamp (example – if welding between row 9 & 10, do not position ground clamp at row 8 & 9 – instead position ground clamp between row 9 & 10), should be connected to bare metal if possible (no paint), and clamp should be attached to a solid piece of the planter (not thin metal). Keep welder's cables away from the planter's wiring harness/modules while welding on the planter.

Before welding on a planter that has 2020 electrical components installed on it, it is best practice to follow the process outlined below.

1. Power down the Display, unplug the display from power.

2. Disconnect the harnesses at the hitch (4 pin, 9 pin, and/or round Deutsch connection).

3. Disconnect power and ground wires from the alternator.

4. Disconnect all weigh pins from SRM or RUM.

5. Disconnect all lift switches from SRM or RUM.

6. Connect ground clamp as described above.