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PinPoint III Envelop Chassis Installation for John Deere Sprayers

123050-039 Chassis Kit Parts List for John Deere 30 Series

Part Number	Part Description	Qty
116301-014	PRESSURE TRANSDUCER ASSY	1
118603-103	TOUGH BALL RAM JD	1
118606-300	HARN SHUTOFF PP SSRS JD 4730	1
118640-040	KEY FOB PP WITH KEY CHAIN	1
118657-001	HARN PRESSURE SENSOR PP	1
118659-001	HARN FLOWMETER PP JD 10'	1
118669-201	HARN SYNCHRO CONVER JOHN DEERE	1
120047-001	GPS CABLE JD	1
120140-024	HEX STANDOFF 4-40 F/F HEX	2
123000-013	MOUNTING PLATE, PPIII	1
123000-150	ASSY, POWER HUB PPIII	1
123000-210	OP MANUAL PPIII ENVELOP	1
123100-003	HARNESS, ADPTER, PPII-PPIII SERV0	1
123100-005	HARNESS, ADAPTER, PPII-PPIII PRESSURE/FLOW	1
123100-008	HARNESS, ADAPTER, PPII-PPIII ISO/CAN/GPS	1
123100-040	POWER HARNESS 40' PPIII	1
123100-096	HARNESS, PPIII, JD CAB	1
123100-103	HN, PPIII, JD 4640 DISPLAY	1
123150-020	EXT CAN-BUS, 20' UNFUSED	1
706530-348	DUST PLUG 6-PIN DEUTSCH DT	11
708000-051	TAPE TEFLON	1
710100-539	SQ U-BOLT 5/16 X 2-1/2 X 3-1/2	2
716008-310	TEE 3/8 FPT X 3 SS	1
716008-311	BUSHING 3/8 MPT X 1/4FPT SS	1
716008-312	FITTING 3/8 MPT X 3/8 MPT X 1	1

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123050-044 Chassis Kit Parts List for John Deere R-Series

116301-014	PRESSURE TRANSDUCER ASSY	1
118603-103	TOUGH BALL RAM JD	1
118640-040	KEY FOB PP WITH KEY CHAIN	1
118657-001	HARN PRESSURE SENSOR PP	1
118659-002	HARN FLOW METER PP JD R-SERIES	1
118669-201	HARN SYNCHRO CONVER JOHN DEERE	1
120047-001	GPS CABLE JD	1
120140-024	HEX STANDOFF 4-40 F/F HEX	4
123000-015	MOUNTING PLATE, PPIII HUB, JD	1
123000-150	ASSY, POWER HUB PPIII	1
123000-210	OP MANUAL PPIII ENVELOP	1
123100-003	HARNESS, ADPTER, PPII-PPIII	1
123100-005	HARNESS, ADAPTER, PPII-PPIII	1
123100-008	HARNESS, ADAPTER, PPII-PPIII	1
123100-040	POWER HARNESS 40' PPIII	1
123100-096	HARNESS, PPIII, JD CAB	1
123100-103	HN, PPIII, JD 4640 DISPLAY	1
123150-030	EXT CAN-BUS, 30' UNFUSED	1
706530-348	DUST PLUG 6-PIN DEUTSCH DT	11
708000-051	TAPE TEFLON	1
713501-409	BOLT HEX HD 3/4-10 X 1-1/2"	2
713501-906	NUT HEX 3/4-10	2
713600-004	WASHER LOCK 3/4"	2
716008-310	TEE 3/8 FPT X 3 SS	1
716008-311	BUSHING 3/8 MPT X 1/4FPT SS	1
716008-312	FITTING 3/8 MPT X 3/8 MPT X 1	1
716008-317	1/4 PIPE SIZE 90° ELBOW	1

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123050-041 Chassis Kit Parts List for John Deere 4920-4940 Sprayers

116301-014	PRESSURE TRANSDUCER ASSY	1
118603-103	TOUGH BALL RAM JD	1
118606-302	HARN SHUTOFF PP SSRS JD 4930	1
118640-040	KEY FOB PP WITH KEY CHAIN	1
118657-001	HARN PRESSURE SENSOR PP	1
118659-001	HARN FLOWMETER PP JD 10'	1
118669-201	HARN SYNCHRO CONVER JOHN DEERE	1
120047-001	GPS CABLE JD	1
120140-024	HEX STANDOFF 4-40 F/F HEX	4
123000-024	KIT, PPIII HUB MOUNTING	1
123000-150	ASSY, POWER HUB PPIII	1
123000-210	OP MANUAL PPIII ENVELOP	1
123100-003	HARNESS, ADPTER, PPII-PPIII	1
123100-005	HARNESS, ADAPTER, PPII-PPIII	1
123100-008	HARNESS, ADAPTER, PPII-PPIII	1
123100-040	POWER HARNESS 40' PPIII	1
123100-096	HARNESS, PPIII, JD CAB	1
123100-103	HN, PPIII, JD 4640 DISPLAY	1
123150-020	EXT CAN-BUS, 20' UNFUSED	1
706530-348	DUST PLUG 6-PIN DEUTSCH DT	9
708000-051	TAPE TEFLON	1
716008-310	TEE 3/8 FPT X 3 SS	1
716008-311	BUSHING 3/8 MPT X 1/4FPT SS	1
716008-312	FITTING 3/8 MPT X 3/8 MPT X 1	1

Chassis Kit Parts List for 4630-R4023 Sprayers

Part Number	Part Description	Qty
116301-014	PRESSURE TRANSDUCER ASSY	1
118603-103	TOUGH BALL RAM JD	1
118606-309	HARN SHUTOFF PP JD 4630	1
118640-040	KEY FOB PP WITH KEY CHAIN	1
118657-001	HARN PRESSURE SENSOR PP	1
118659-002	HARN FLOWMETER PP JD 27’	1
118669-201	HARN SYNCHRO CONVER JOHN DEERE	1
120047-001	GPS CABLE JD	1
120140-024	HEX STANDOFF 4-40 F/F HEX	2
123000-013	MOUNTING PLATE, PPIII	1
123000-150	ASSY, POWER HUB PPIII	1
123000-210	OP MANUAL PPIII ENVELOP	1
123100-003	HARNESS, ADPTER, PPII-PPIII SERV0	1
123100-005	HARNESS, ADAPTER, PPII-PPIII PRESSURE/FLOW	1
123100-008	HARNESS, ADAPTER, PPII-PPIII ISO/CAN/GPS	1
123100-040	POWER HARNESS 40' PPIII	1
123100-096	HARNESS, PPIII, JD CAB	1
123100-103	HN, PPIII, JD 4640 DISPLAY	1
123150-020	EXT CAN-BUS, 20' UNFUSED	1
706530-348	DUST PLUG 6-PIN DEUTSCH DT	11
708000-051	TAPE TEFLON	1
123000-016	MOUNTING PLATE, PPIII 4630/R4023	1
716008-310	TEE 3/8 FPT X 3 SS	1
716008-311	BUSHING 3/8 MPT X 1/4FPT SS	1
716008-312	FITTING 3/8 MPT X 3/8 MPT X 1	1

Background Information

- John Deere machines utilize the JD SprayStar rate controller from the factory
- The SprayStar controller cannot be taken offline on these units as the controller also interfaces critical engine and chassis functions
- It is necessary to install a completely isolated secondary display alongside the existing primary display for a 3rd party to operate correctly without interfering with the machine's critical functions
- At this time, it is unlikely that one singular display can be used to run both systems in tandem
- The secondary John Deere display will need to be supplied with serial GPS via the supplied cabling as it cannot exist on the machine's existing CANBUS network and function correctly
- This secondary display will need to have a Section Control unlock at a minimum for the system to perform individual nozzle shutoff.
- Different JD controllers (2600, 2630, Gen 4, Gen 5, etc.) are capable of different task control sections, confirm with your JD dealer
- The Capstan PinPoint III Envelop system requires harnessing from the cab to the rear of the machine where the Envelop hub is located
- There are provisions for the harnessing to accept either John Deere or Ag Leader displays to control the Capstan system. Other brands of task controllers are compatible, but additional harnessing may be needed to interface these displays.
- A harness to interface with JD displays (PN 123100-103) is available through CapstanAG and is included in the CapstanAG John Deere chassis kit for each approved platform
- Machines with Existing PinPoint II (Legacy) systems can be updated to Envelop with minimal changes from the original setup
    -Existing cab display extension, shutoff harness, servo harness, flowmeter, and power harnessing can all be used for the Envelop system
    -Please inspect the existing harnessing for damage and replace if necessary

Envelop Hub Installation (4730-4830 and 4630-R4023)

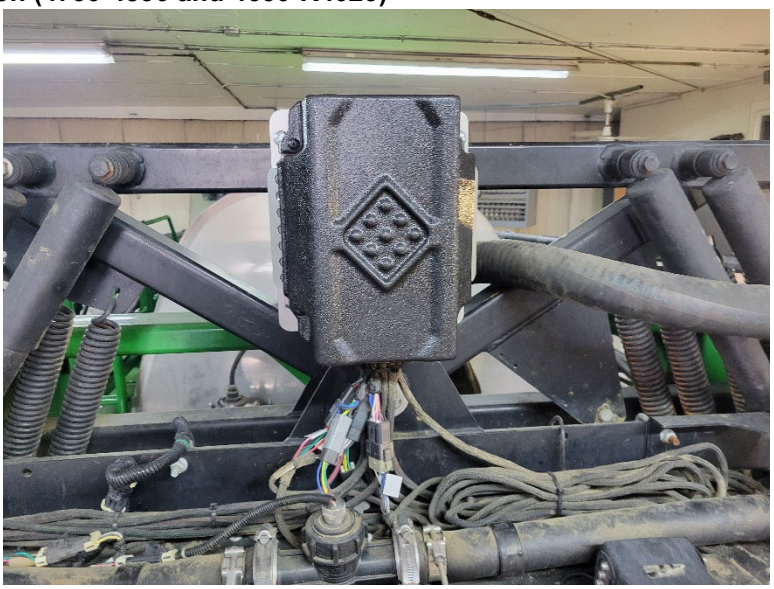

Figure 1. Envelop Hub Mounting Location 4730-4830

Figure 1: Top Center of the boom center rack on all 4730 and 4830 boom options

- Mounting location should be similar to PinPoint II systems. Harness lengths should not need to be altered for Envelop upgrade kits
- Mount as low as possible to avoid damage from Trees, etc.
- Supplied U-bolts should be used to mount to the 2.5” tubing of the center rack
- Installation instructions assume this mounting location

Figure 2. Envelop Hub Mounting Location 4630-R4023

Figure 2: Hub mount bracket (118640-111) used for PinPoint II systems may be utilized

- Two holes may need added to the RH side of the bracket to mount 123000-013 (hub mounting plate)
- Future brackets made specifically for Envelop systems will come with needed holes

Envelop Hub Installation (R4030-R4045)

Figure 3. Envelop Hub Mounting Location on R4038 Sprayer

Figure 3: Hub mount bracket (PN 123000-015) shown here

- (2) ¾ x 1 ½ Bolts, ¾ nuts and lock washers are required to mount to the existing holes in boom frame
- Current design of this bracket does not require use of the PPIII Hub Bracket (PN123000-013) as it bolts directly to the boom bracket.

Power Harness and Breaker Connection

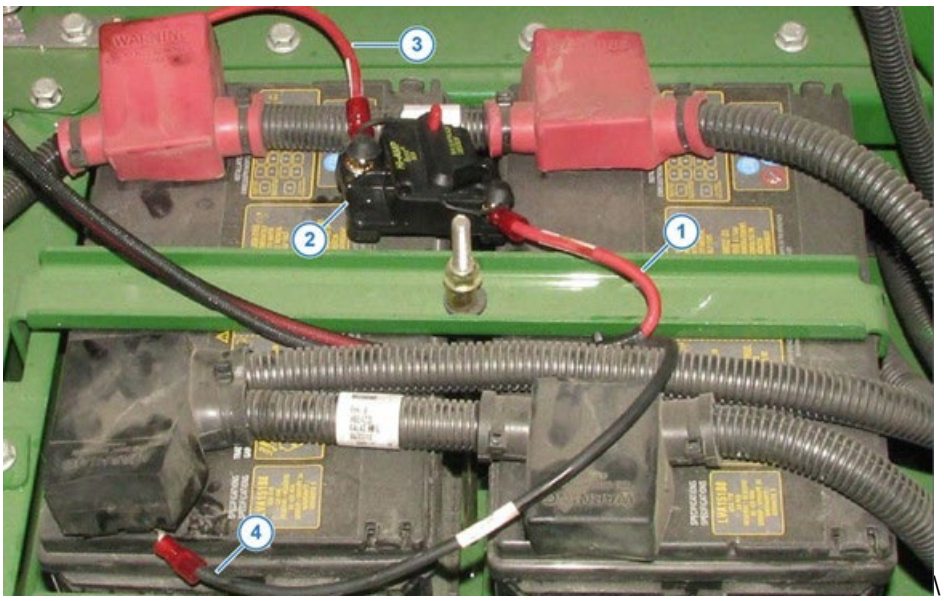

Figure 4. Battery Harness and Breaker Location

Figure 4: Route Battery Power Harness

- Route power harness along machines from the Envelop hub mounting location to the battery box of the sprayer
- Open breaker contacts by touching red button on breaker housing
- Cut a length of red power cable from the harness to reach from the battery positive terminal to a suitable breaker mounting position.
- Install large 3/8” ring terminal on one end of cut red wire and a smaller ¼” ring terminal on the other end.
- Connect large terminal to battery post and small terminal to breaker “BAT” stud and tighten securely
- Install small ¼” ring terminal on the remaining end of the power harness and attach to the “AUX’ post of the breaker.
- Secure breaker as needed to avoid interference with any metal objects nearby
- Leave breaker “tripped” until connections are made at the Envelop hub

Power Hub Connections

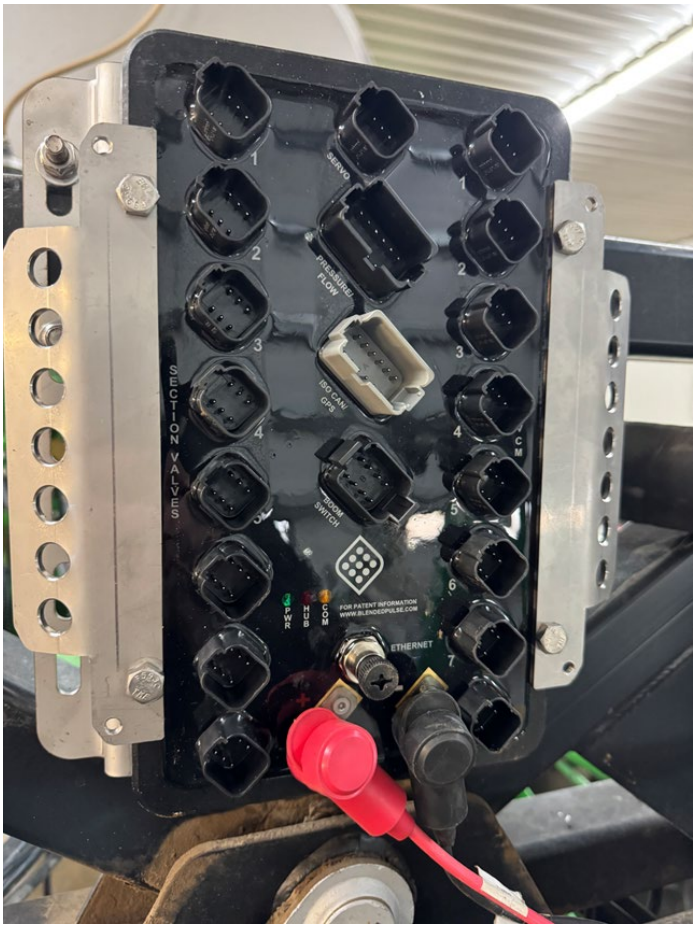

Figure 5. Power Cable Connection

Figure 5: Battery power comes from main breaker at battery

- Main breaker must be “tripped” and open before work
- Slide correct colored dust caps over each battery power lead
- Install ¼” ring terminals on power leads
- Secured with ¼” bolts and flange nuts securely

Power Hub Connections Cont'd

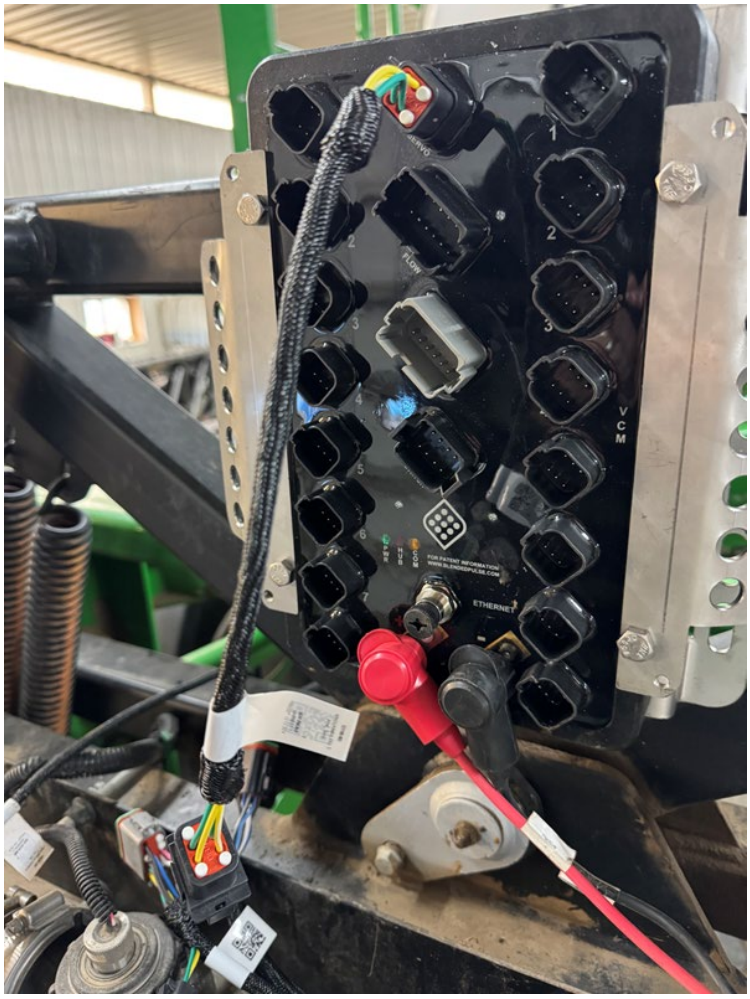

Figure 6. Servo Port Connection

Figure 6: Install PPII-PPIII Servo Adapter (PN 123100-003) into Servo port in hub

- Synchro Conversion Harness (PN 118669-201) will plug into the 8-pin connection on this harness and route to the hydraulic PWM valve under the chassis (covered later in this guide)

Power Hub Connections Cont'd

Figure 7. Pressure/Flow Port Connection

Figure 7: Install PPII-PPIII Pressure/Flow Adapter (PN 123100-005) into Pressure/Flow port in hub

- This harness has two 6 pin connections opposite the hub connection
- One will route to the Pressure sensor adapter cable (PN 118657-001)
- The other 6 pin mates to the applicable Flowmeter Adapter Cable
    - 118659-001 For 4700-4930 sprayers
    - 118659-002 For 4630-R Series machines

Power Hub Connections Cont'd

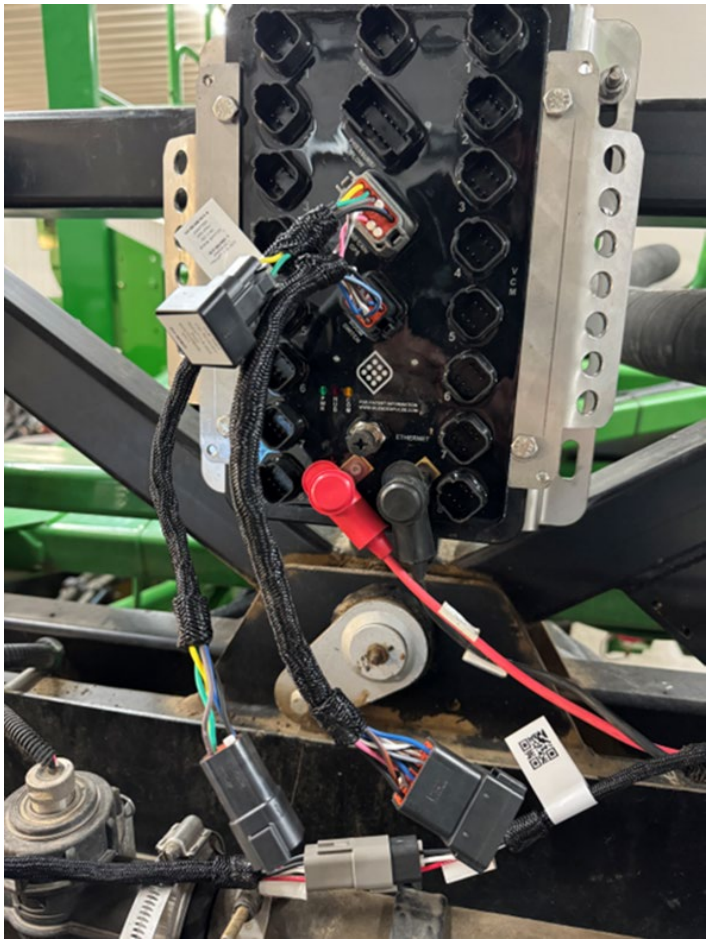

Figure 8. ISO/GPS/Boom Switch Connection

Figure 8: Install PPII-PPIII ISO/GPS/Boom Switch Adapter (PN 123100-008) into the gray ISO/CAN/GPS port and into the black 8 pin boom switch port in the Envelop hub

- The opposing end of the harness has a 12-pin connection for the proper boom shutoff valve adapter harness to interface. Several different shutoff adapters are available for many different JD boom configurations. Be sure you have received the correct adapter for your application
- The 6 pin connection interfaces the 6-pin display connection that routes to the cab to carry ISOBUS and GPS signals to the hub.
    - If updating from PinPoint II systems, this will be the harness that was likely plugged into the "Boom 12" port in the gateway hub and routed up to the PinPoint II display in the cab. This harness does not need to be removed when upgrading unless there is a noticeable issue with it
- Be sure the small square CAN terminator (PN 123000-113) is in place within this harness and was not misplaced

Power Hub Connections Cont'd

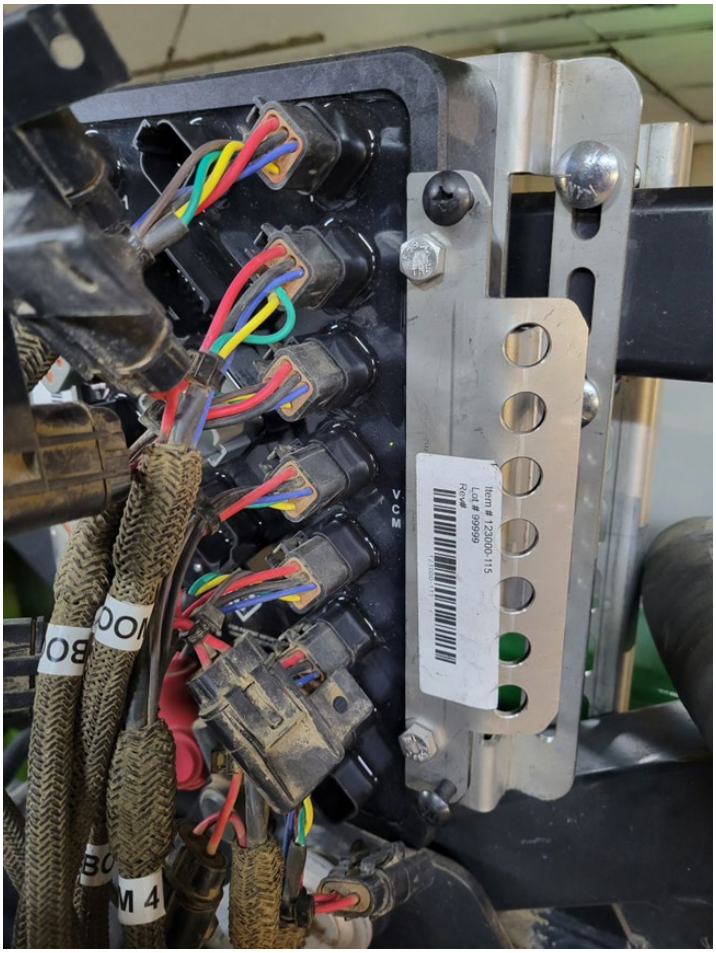

Figure 9. VCM Extension Connections

Figure 9: VCM Channel connections

- Each extension harness leads to the VCM's on the boom
- Route connections against strain relief and secure with zip ties through holes if desired
- CAN "Y" Harnesses (PN 118640-048) may be used in these ports if the system has more than 8 extension harnesses running to the hub. For example: A 9 section 100' R-Series machine with existing PinPoint II system would require 2 "Y" harnesses in ports 3 and 5 to allow the existing 9 extension harnesses to access the hub. Install a dust plug in port 8 for this scenario. Try to keep the layout symmetrical to each side for proper power draw (Refer to boom layout sheet send with the boom kit)
- Install supplied dust plugs into unused ports

Boom and Chassis Connections/Boom Shutoff Adapter

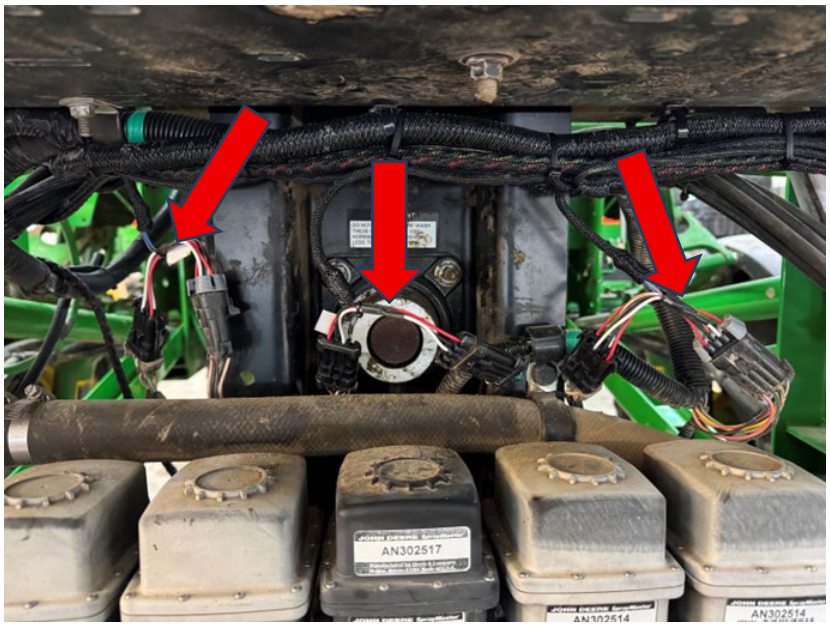

Figure 10. Boom Shutoff Adapter center section connections for 4730-4930 Sprayers

Figure 11. Boom Shutoff Adapter connection for outer wing on 4730-4930

Figure 10 and 11: 4730-4930 Boom Shutoff Adapter Connections

- Boom shutoff harness plugs into the ISO/GPS Boom Adapter Harness (see Fig 7.)
- Utilizes the same PinPoint II style shutoff adapter that runs to each boom section valve
- Be sure to tee the outer boom shutoff connections into the boom section valve towards the outside of the boom, NOT the fence row valve with the small hose.
- Location of the fence row ball valve can be deceiving, verify plumbing supplies outer boom

Boom and Chassis Connections/Boom Shutoff Adapter

Figure 12. Boom Shutoff Adapter Connection on 4630/R4023 Sprayer

Figure 12: Boom Shutoff Adapter connection behind the tank of a 4630/R4023 Sprayer

- Bulkhead style connectors “tee” between the existing connection that carries boom signals
- Opposite end of the shutoff adapter connects to the ISO/GPS Boom Adapter Harness (see Fig. 7)

Boom and Chassis Connections/Boom Shutoff Adapter

Figure 13. Boom Shutoff Adapter Connection on R4038 Sprayer

Figure 13: Boom Shutoff Adapter Connection behind left rear axle of R4038 sprayer

- Bulkhead style connectors “tee” between the existing connection that carries boom signals
- Use inner connection for shutoff adapter connection as shown
- Different part number adapters are available for different boom width and section counts for R-Series machines; confirm you have the right part prior to installation (100’ 9 Section adapter shown here).
- Opposite end of the shutoff adapter connects to the ISO/GPS Boom Adapter Harness (see Fig. 7)

Boom and Chassis Connections/Flowmeter Adapter Harness

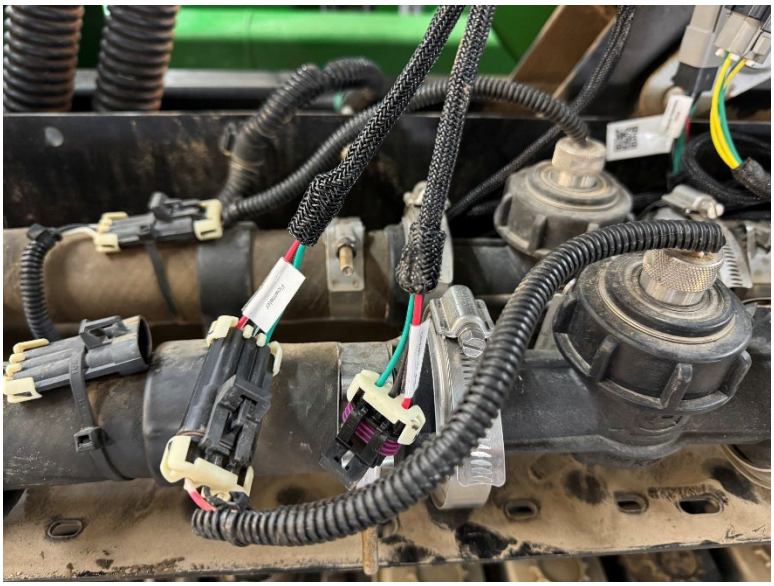

Figure 14. 4830 Flowmeter Adapter Connection

Figure 15. 4630/R4023 Flowmeter Adapter Connection

Boom and Chassis Connections/Flowmeter Adapter Harness Cont'd

Figure 16. R4038 Flowmeter Adapter Connection

Figure 14,15,16: Flowmeter Adapter Connections for John Deere sprayers

- 4700-4930 Flowmeters are located at the top of the center rack. A 10' Flowmeter Adapter harness (PN 118659-001) is used to interface at the location shown in figure 12.

- 4630-R4023 Flowmeters are located on the RH side of the tank along the frame. A 27' Flowmeter Adapter (PN 118659-002) is used to interface at the location shown in figure 13.

- R4030-R4045 Flowmeters are located on the LH side of the tank along the frame. A 27' Flowmeter Adapter (PN 118659-002) is used to interface at the location shown in figure 14.

- All flowmeters use the same style connection as long as they haven't been replaced with another brand of flowmeter.
- Plug the flowmeter into the connection labeled "Flowmeter" and leave the connection labeled "Controller" unplugged and dust cap this connection.
- If updating a PinPoint II system to Envelop, unplug the connection labeled "Controller" and dust cap.
- Future harnessing may not include the "Controller" leg of the harness

Boom and Chassis Connections/PWM Valve Adapter Harness

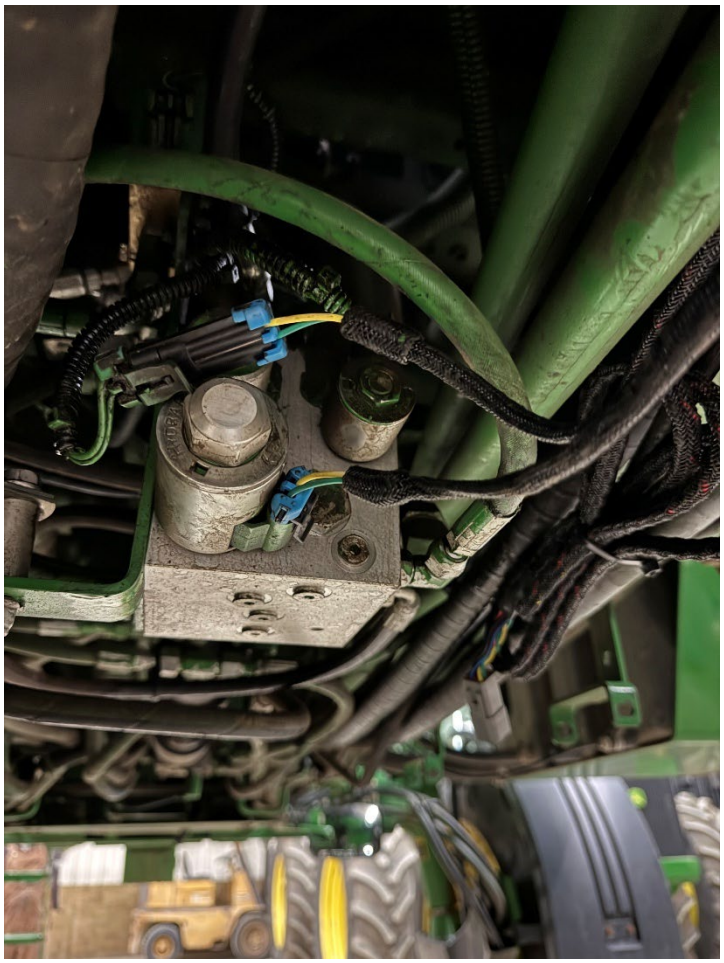

Figure 17. Solution Pump Hydraulic Control Valve (4830 shown)

Figure 17: Solution Pump PWM Valve Interface Harnessing

- Route to the underside of the machine and locate the solution pump hydraulic control block
- All John Deere machines use similar valves and have a similar location under the tank of the machine
- Follow hydraulic hoses from the solution pump back to the block if you have trouble locating it.
- Remove existing connection from PWM valve (2 pin Metripack style plug)
- Older machines (4700-4720) use a similar block, but with a different connection (2 pin Weatherpack), currently a harness is not made for these machines, and a field swap of connector may be required.
- Tee Capstan harness in between this connection, one end going to the valve and the other needs to be hooked to the original harness from the machine
- The PP3 system will receive pump on/off commands from the cab and fill station from the original harnessing

Boom and Chassis Connections/Pressure Sensor and Harness

Figure 18. Pressure Sensor Installation (4830 Shown, other models similar)

Figure 18: Capstan Pressure Sensor Installation

- Install supplied bushing, tee, and pipe nipple into existing port for the machine's pressure sensor
- Add Capstan pressure sensor and route harness towards hub
- Plug 3 pin connection into adapter harness running to PSI/Flow port on hub (fig 6.)

Boom and Chassis Connections/GPS Adapter Harness

Figure 19. GPS Adapter Harness Tee Location

Figure 19: John Deere StarFire GPS Adapter Harness (PN 120047-001) will "Tee" between the existing 12 pin connection at the John Deere StarFire receiver.

- Route the extension with the 9-pin serial connection across the cab roof, secure as required
- Route cable through the access point along the RH Lower cab glass for access in later steps

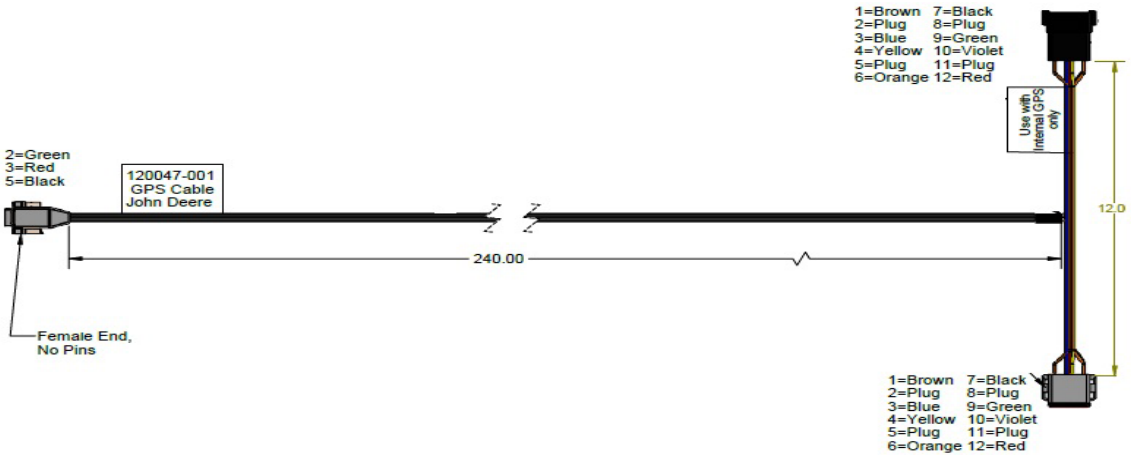

Figure 20. John Deere GPS Adapter Harness (PN 120047-001)

Boom and Chassis Connections/Cab Harnessing

Figure 21. Cab Harnessing and Connections

Figure 21: Cab Harnessing for ALL John Deere Sprayers

- A 20’ Capstan CAN Extension harness (PN 123150-020) will carry ISOBUS and GPS signals from the hub to the cab harnessing shown here.
- Existing PinPoint II systems being upgraded to Envelop can utilize the existing “Boom 12” extension harness (PN 118650-020 or similar) that formerly plugged into the CapView display harness. Verify that harness is in good condition and replace it if needed with PN 123150-020.
- The 20’ extension from the hub will likely end behind the cab of the machine and along the frame rail, locate this connection and plug in connector P3-A of the JD Cab Harness (PN 123100-096)
- Route the remainder of 123100-096 into the cab where it will interface connections for the display.
- Capstan’s John Deere display harness (PN 123100-103) will connect to ISO-A to carry ISO signals between the hub and the John Deere display
- Connection DB9-A connects to the John Deere StarFire GPS Tee harness (PN 120047-001) and splits the signal within the harness to the Envelop hub as well as the John Deere display via connection DB9-B
- NOTE: ISO-A connection is pinned to directly interface an Ag Leader InCommand display harness’ CAN port. Ag Leader displays will not require the use of DB9-A or DB9-B serial connections.

Boom and Chassis Connections/Cab Harnessing (For Reference)

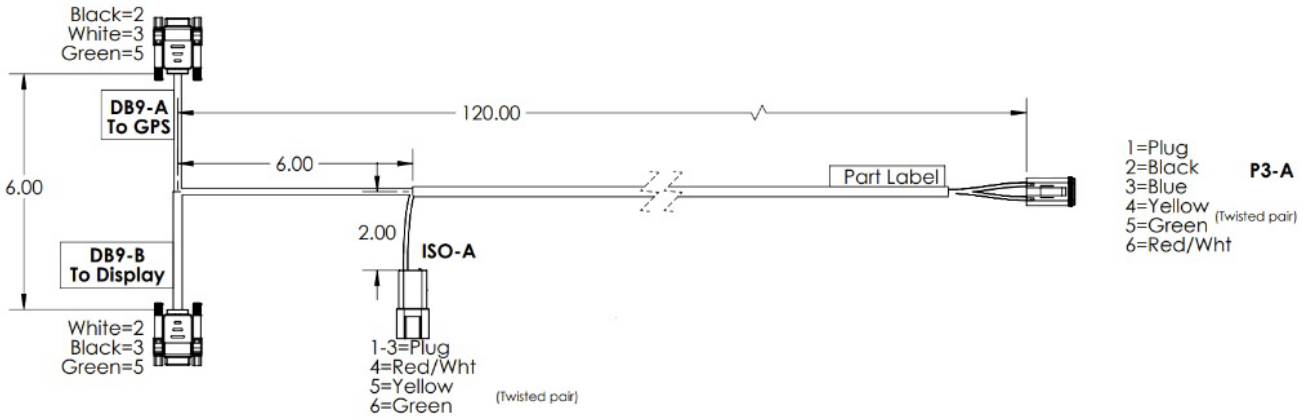

Figure 22. John Deere Cab Harness (PN 123100-096)

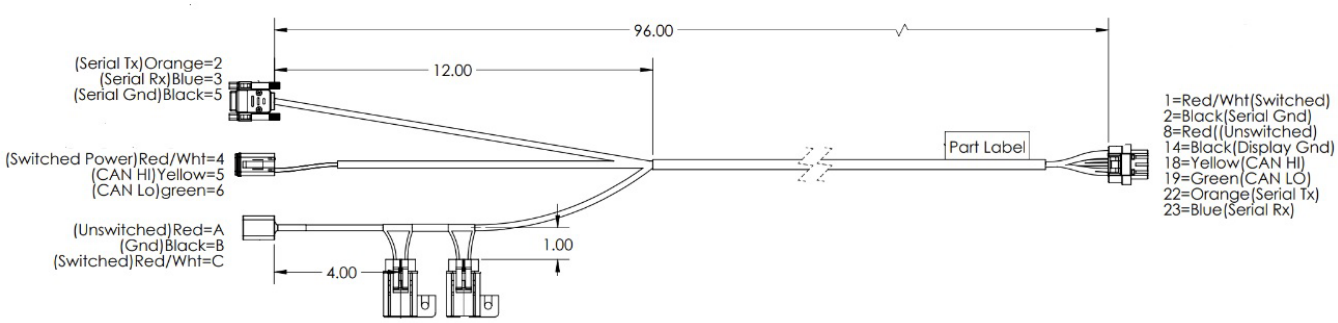

Figure 23. John Deere Display Harness (PN 123100-103)

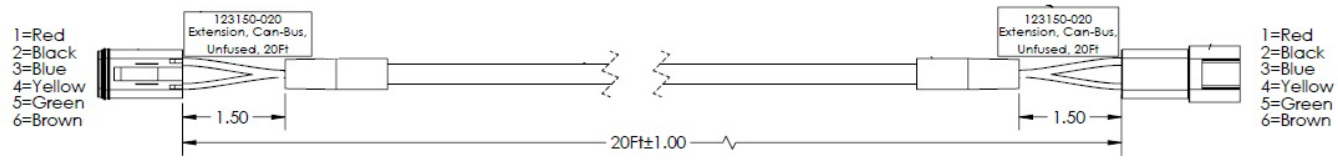

Figure 24. CAN Extension Harness (PN 123150-020)