John Deere 30 Series

4730-4830 Series

4630-R4023

PinPoint III Envelop Integration and Setup

John Deere 30 Series ISOBUS Compatibility

- John Deere 30 series 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 an isolated display alongside of the existing machine controller for a 3RD party to operate correctly without interfering with the machines critical functions
- Different JD controllers (2600, 2630, Gen 4, Gen 5, etc) are capable of different task control sections, confirm with your JD dealer

JOHN DEERE 30 SERIES HARNESSING

- The CapstanAG 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 will likely work, but additional harnessing may be needed
- A harness to interface with JD displays is available through CapstanAG
- 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

JOHN DEERE 30 SERIES PP3 MOUNTING LOCATIONS

- Power Hub Mount for 4730 and 4830

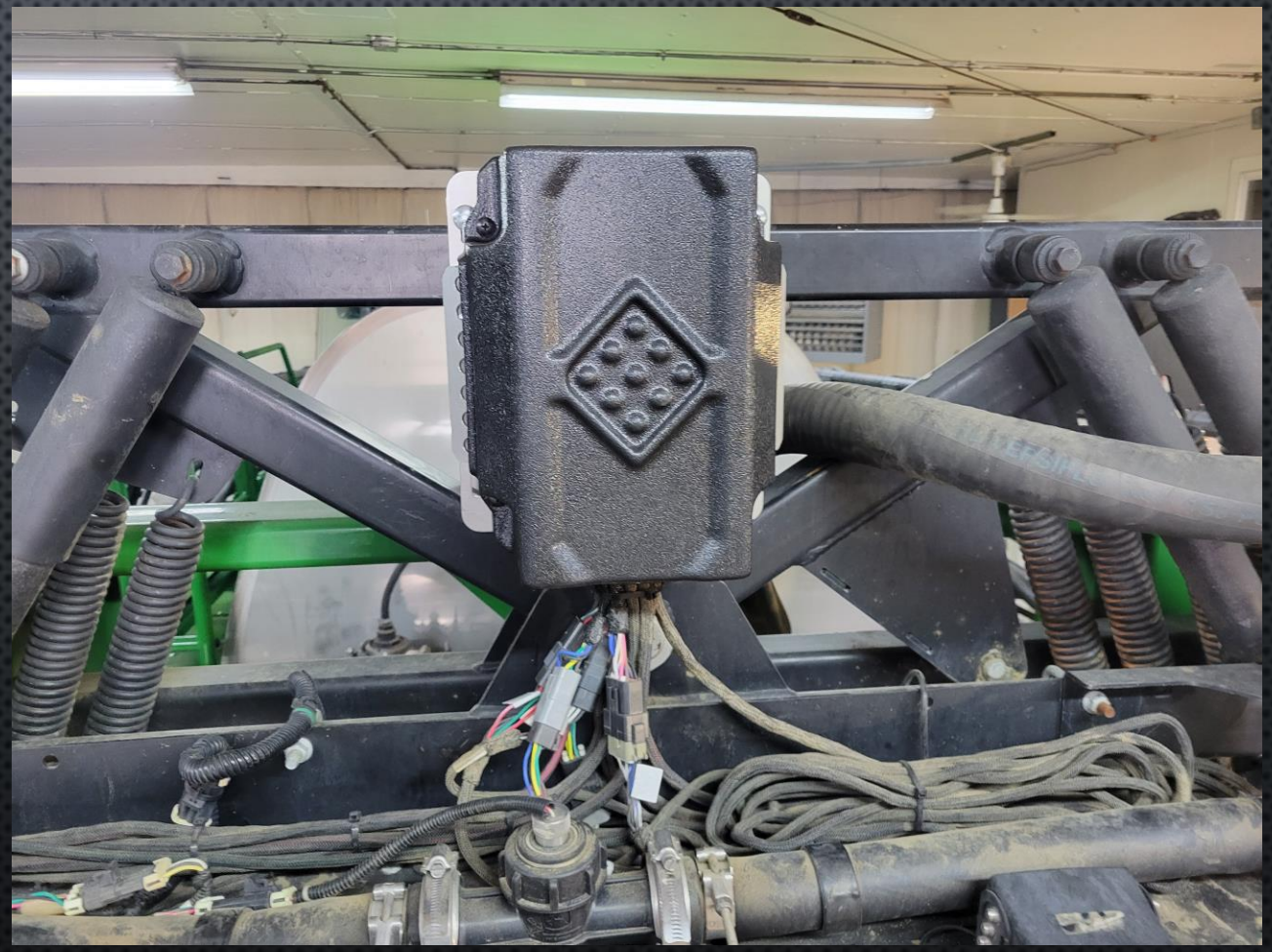
  -Mounting location should be similar to PinPoint II systems. Harness lengths should not need to be altered for Envelop upgrade kits

  -Top center of the boom center rack on black boom machines

  -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



JOHN DEERE 30 SERIES PP3 MOUNTING LOCATIONS

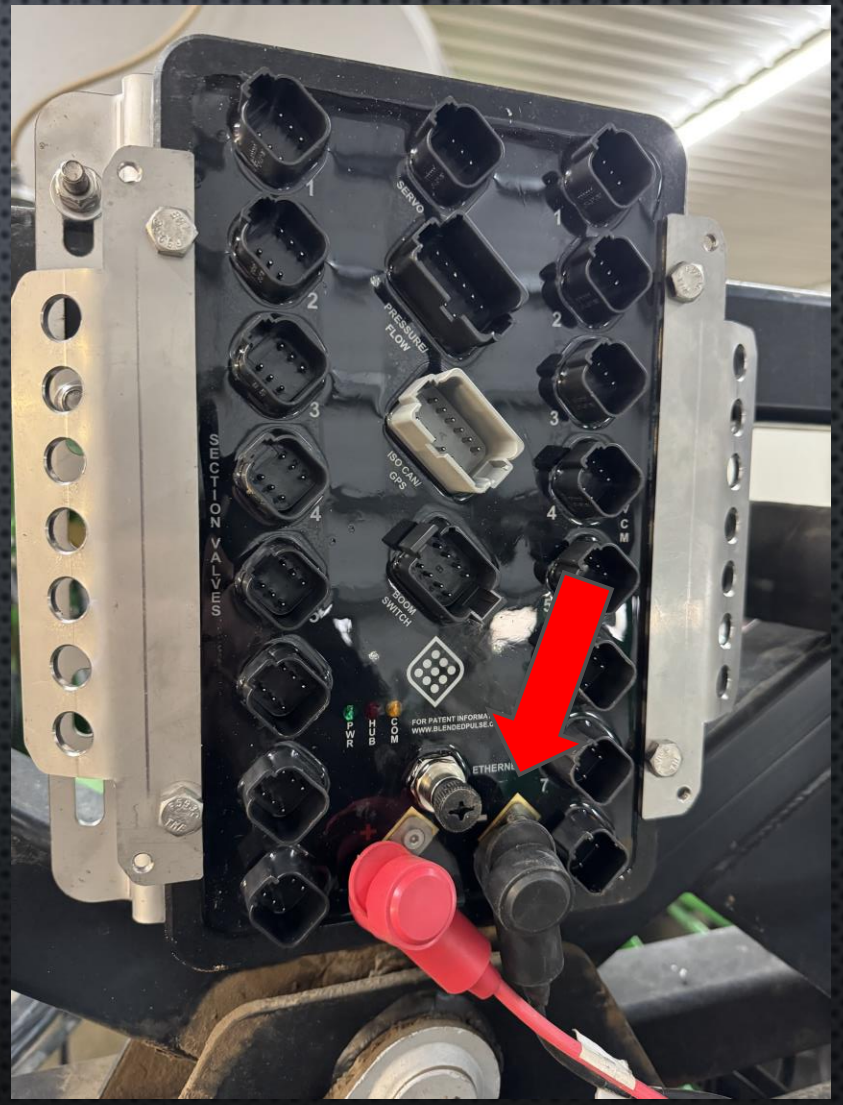
- Power Hub Mount for 4630 and R4023

  -Mounting location should be similar to PinPoint II systems. Harness lengths should not need to be altered for Envelop upgrade kits

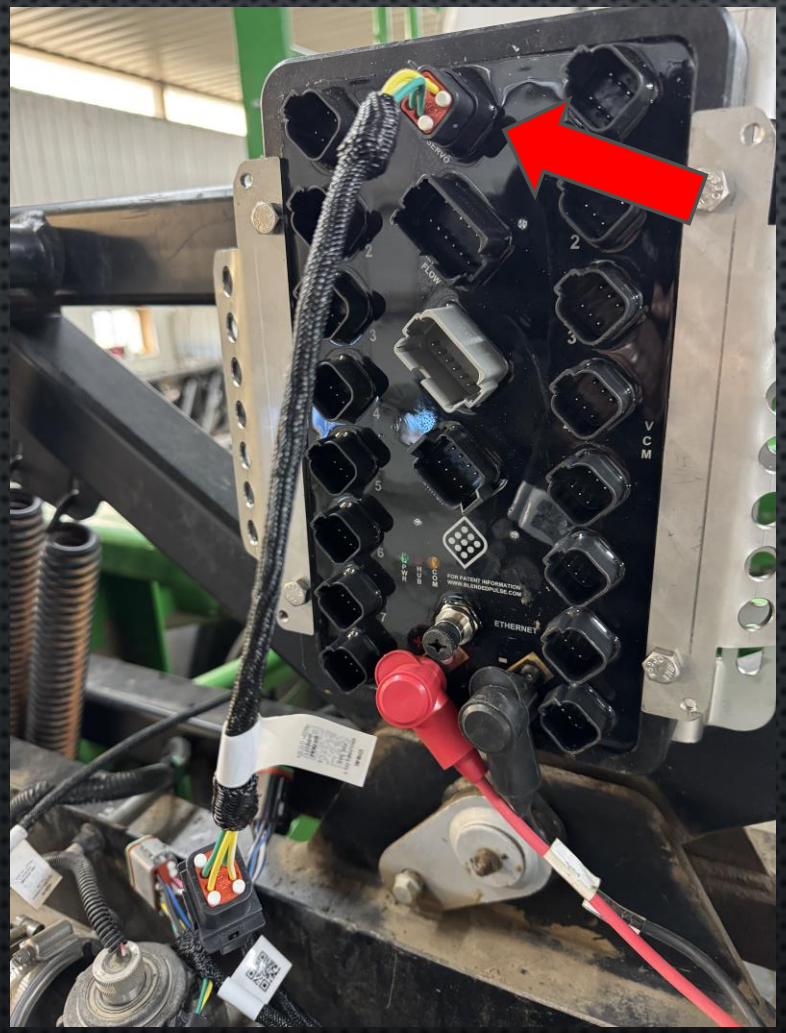
  -The hub mount bracket (118640-111) used for PinPoint II systems may be used. Two holes may need to be added to the RH side. Future brackets will have holes to accommodate both systems

JOHN DEERE 30 SERIES PP3 HUB CONNECTIONS

- Power hub connections
  - Battery power from main breaker at battery
  - Manually open main breaker before work
  - Secured with ¼” bolts and flange nuts
  - Install dust caps over leads

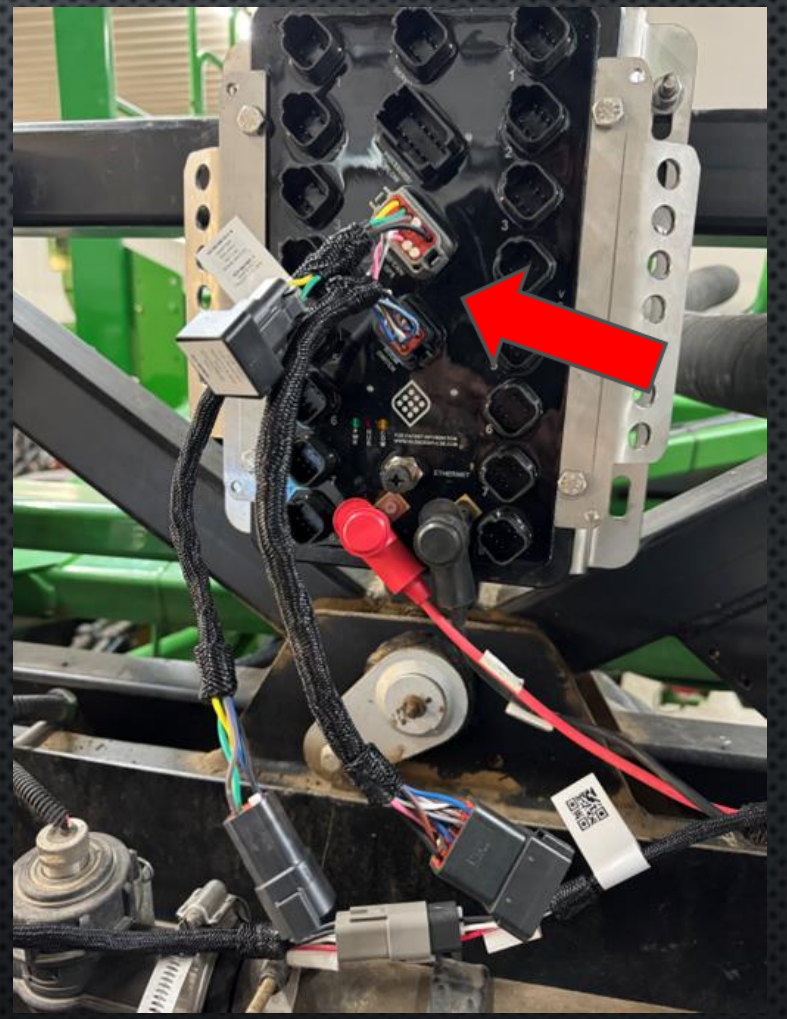


JOHN DEERE 30 SERIES PP3 HUB CONNECTIONS



Servo Port

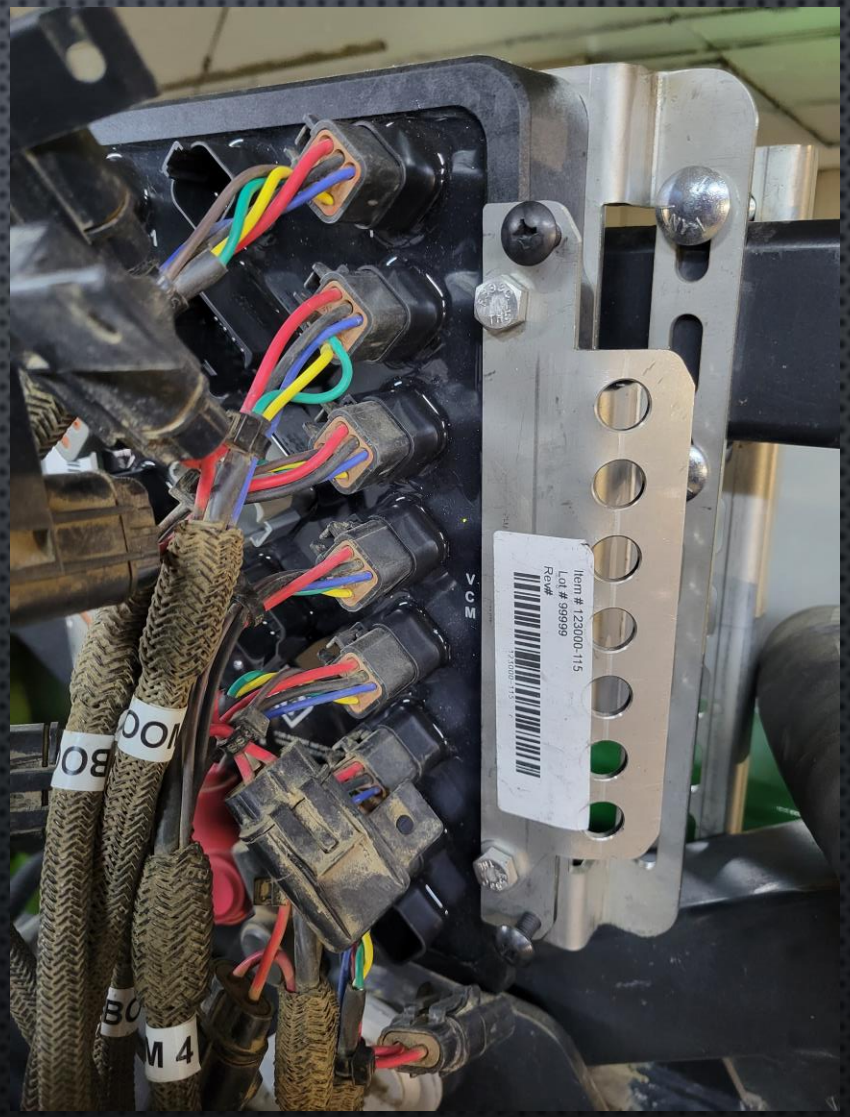
Pressure/Flow Port



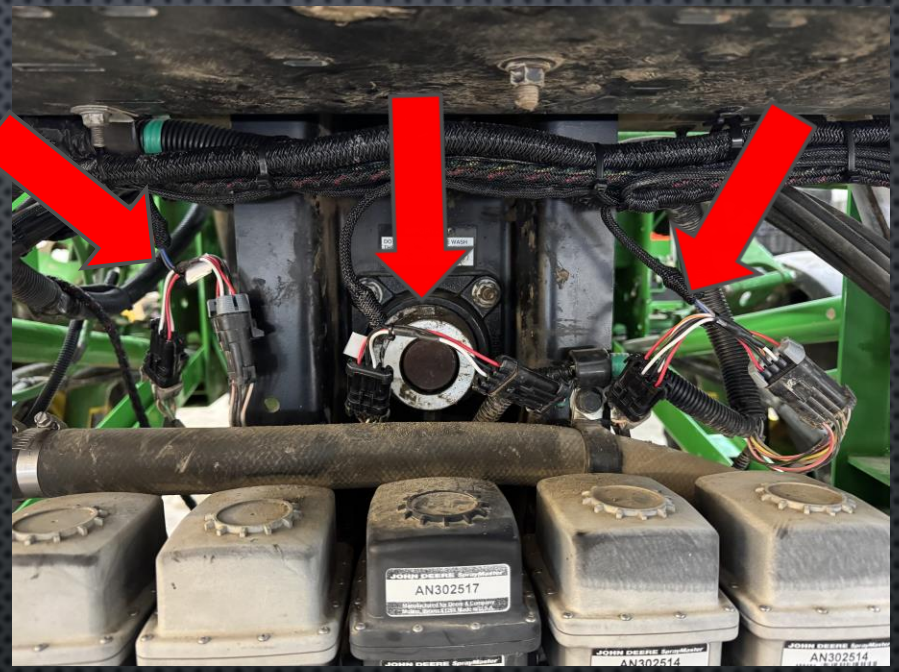
ISO/GPS And Boom Switch

JOHN DEERE 30 SERIES PP3 HUB CONNECTIONS

- Power hub connections
  - VCM Channel connections
  - Each extension harness leads to the VCM's on the boom
  - Route connections against strain relief if desired
  - Install dust plugs into unused ports



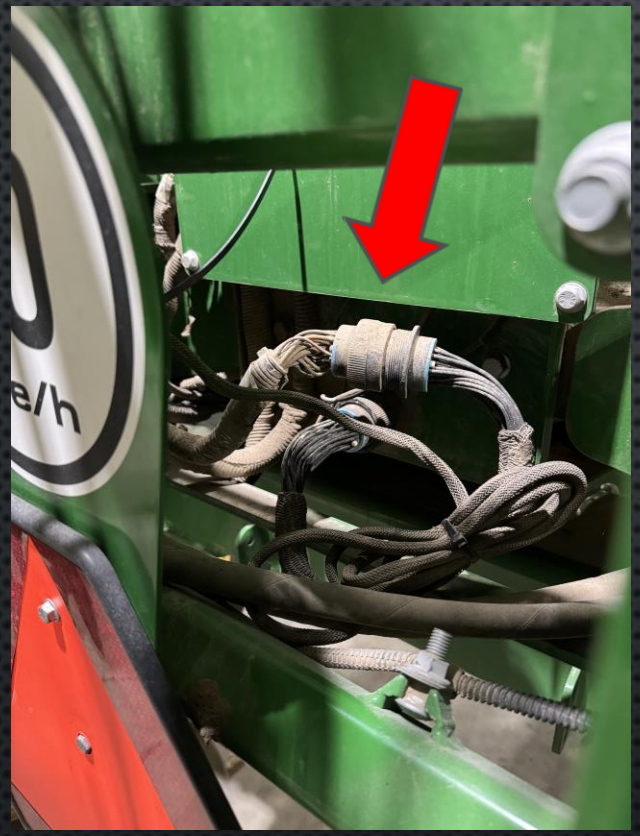
JOHN DEERE 30 SERIES PP3 CHASSIS/BOOM CONNECTIONS



4730-4830 Boom switch/shutoff adapter connection

- Boom shutoff harness plugs into the ISO/GPS Boom Adapter Harness (top right)
- Utilizes the same PinPoint II style shutoff adapter for the sprayer 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.
- The location of the fence row valve can be deceiving as it is closer to the center of the machine

JOHN DEERE 30 SERIES PP3 CHASSIS/BOOM CONNECTIONS



4630-R4023 Boom switch/shutoff adapter connection

- Boom shutoff harness plugs into the ISO/GPS Boom Adapter Harness (right)
- Utilizes the same PinPoint II style shutoff adapter for these machines that routes to a single point connection behind the tank (left)

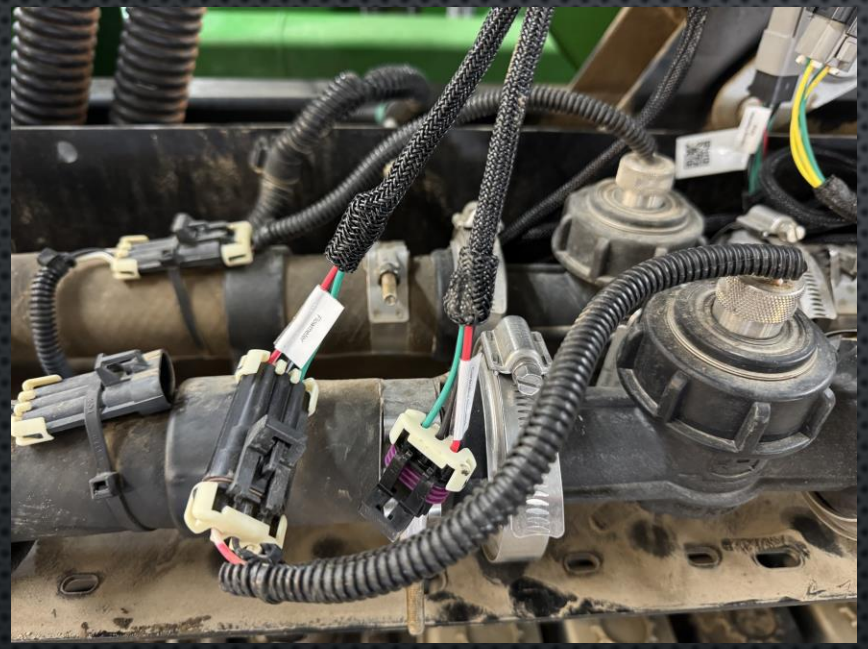
JOHN DEERE 30 SERIES PP3 CHASSIS/BOOM CONNECTIONS

CapstanAG Pressure Sensor Installation

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

4730-4830 Series shown. Other models similar

JOHN DEERE 30 SERIES PP3 CHASSIS CONNECTIONS



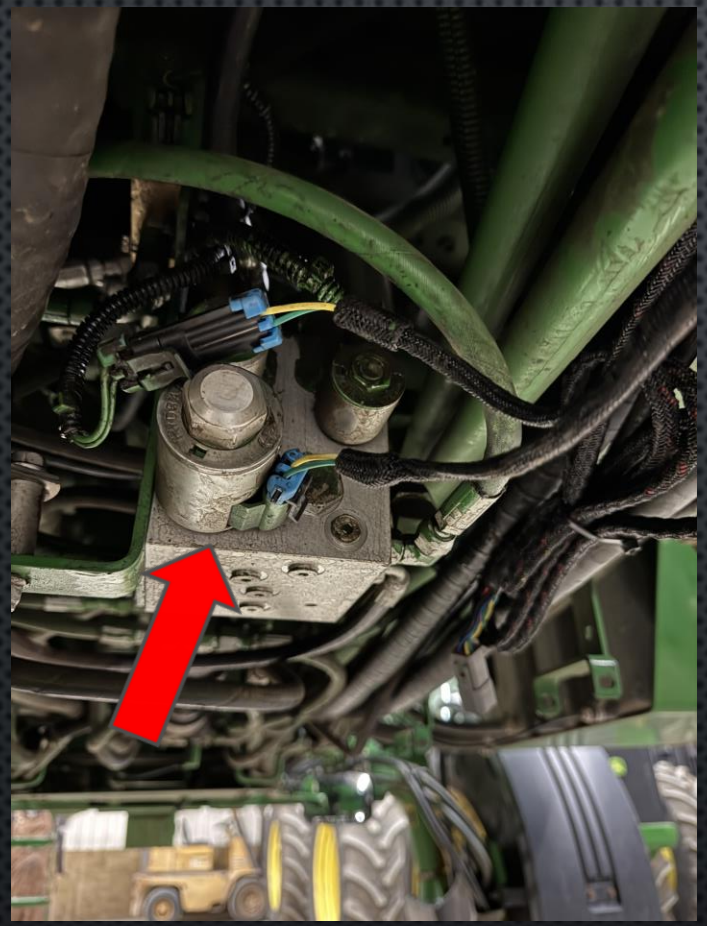
4730-4830 Series
(High Flow Shown)

Flow Meter Interface Harness

- Use connection labeled "flowmeter" only. Do not hook up the lead of the harness labeled "controller"
- If updating from PinPoint 2, unplug the "controller" labeled side of the flowmeter harness
- High flow 30 series machines use two flowmeters, only interface the flowmeter labeled "flowmeter 1" on the JD side of the harness
- Leave the valve for the second high rate flowmeter OFF for use with PinPoint 3

4630 Series

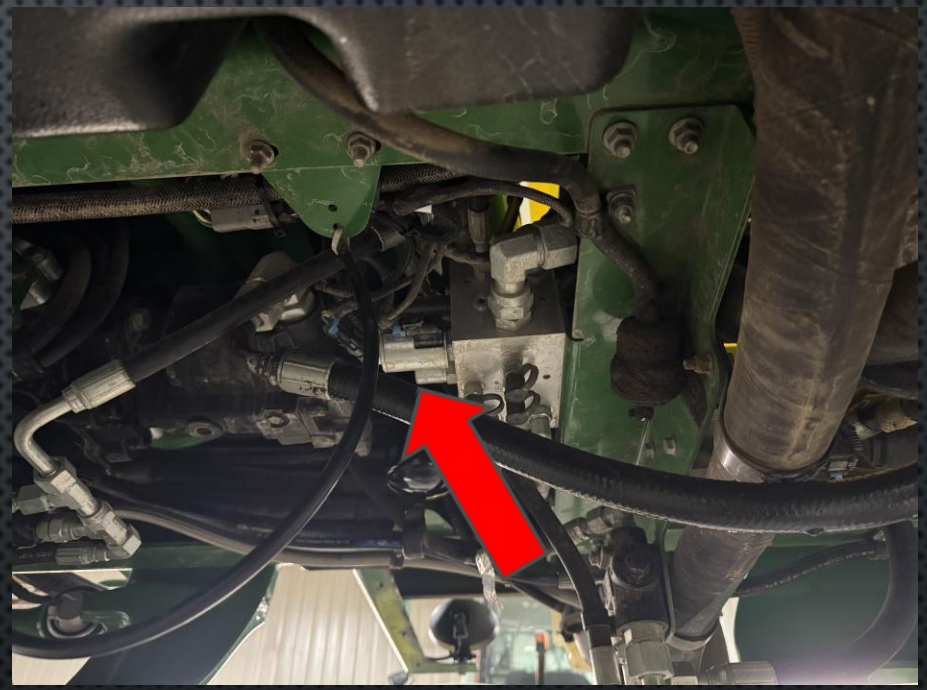
JOHN DEERE 30 SERIES PP3 CHASSIS CONNECTIONS



4730-4830 Series
(Under Cab)

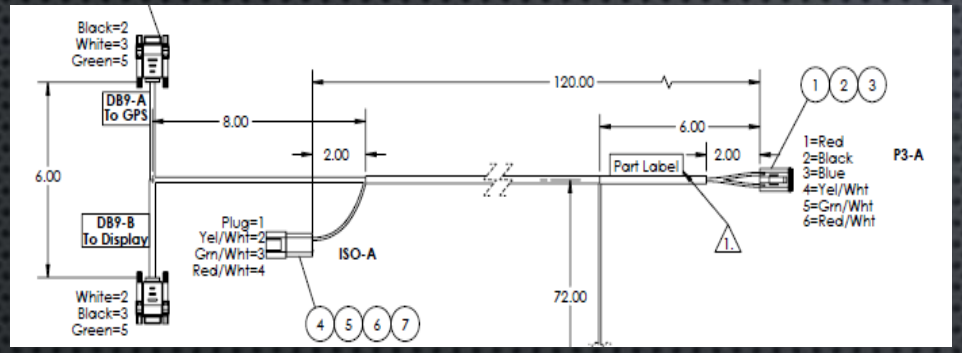
Solution Pump PWM Valve Interface Harness

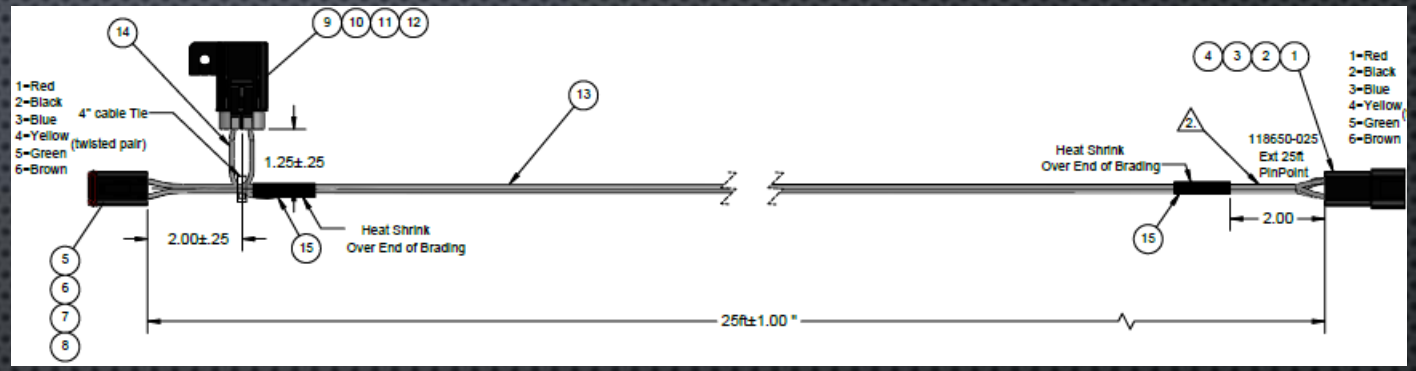
- Route to the underside of the machine and locate the solution pump hydraulic control block
- Remove existing connection from PWM valve (2 pin Metripack style plug on 30 series machines)
- Tee CapstanAG harness in between this connection, one end going to the valve and the other needs to be hooked to 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



4630-R4023 Series
(Under Cab)

JOHN DEERE 30 SERIES PP3 CAB INTERFACE HARNESSING



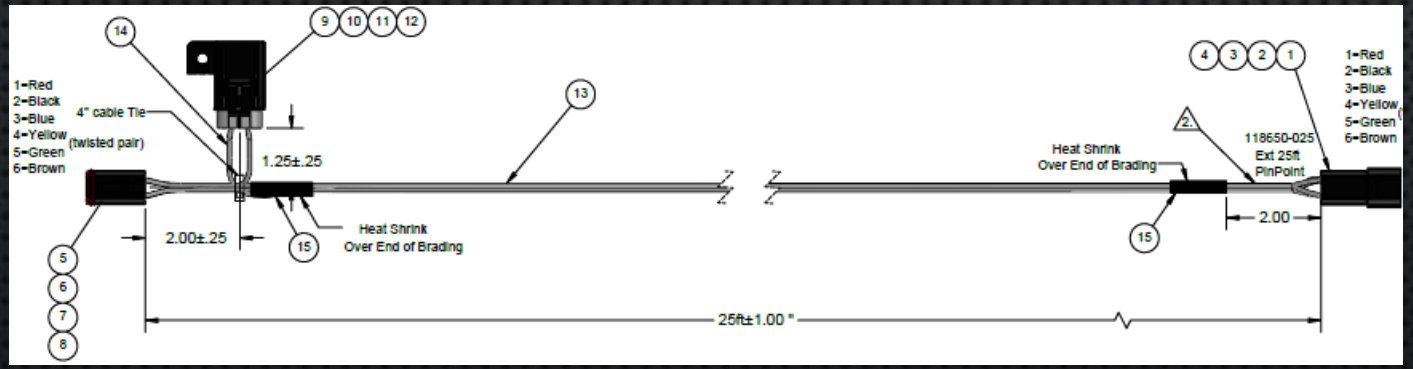


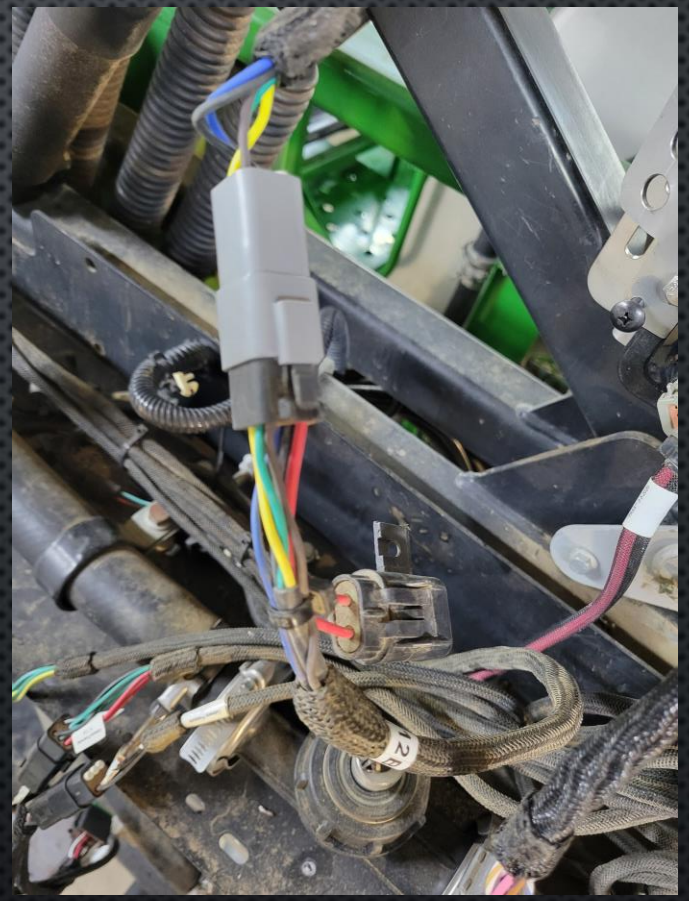
- PinPoint 3 Envelop systems on John Deere 30 series machines use PinPoint II style harnessing with adapting harnesses at the hub location
- This was done to streamline both new installations as well as upgrade kits
- A 20' PinPoint CAN extension harness (Above Right PN 118650-020) will carry the ISOBUS signals from the hub to the cab harness. Note: Harnesses used with new installs will not be fused (PN 123150-020)
- Cab harness (Above Left) will interface with the cab extension and carry signals to the desired display harness in the cab (more details in later slides)
- On systems using a JD display, serial GPS is also carried from the cab back to the PP3 hub
- Separate display specific harnesses will interface the 3RD party display (more details in later slides)

JOHN DEERE 30 SERIES PP3 CAB INTERFACE HARNESSING

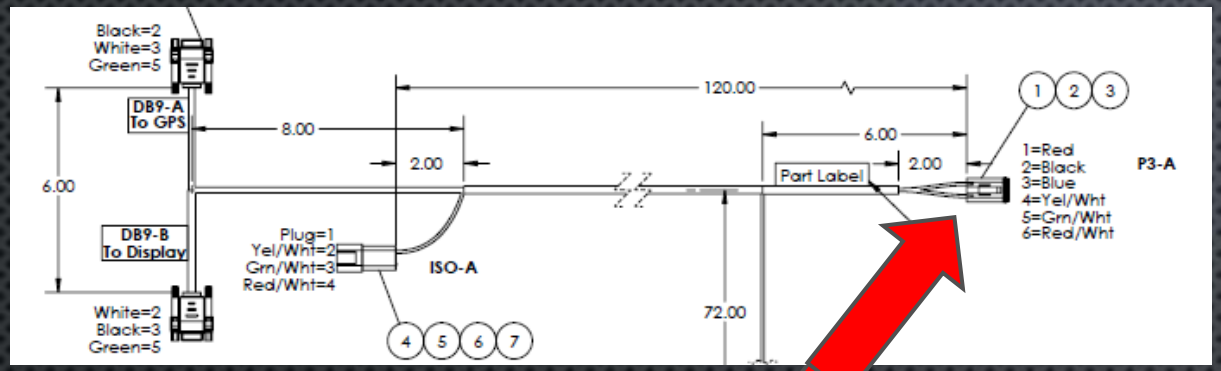
JOHN DEERE 30 SERIES PP3 CAB INTERFACE HARNESSING

- 20' CAN EXTENSION (118650-020 OR 123150-020)
  - PLUG INTO 6 PIN CONNECTION ON ISO/CAN ADAPTER AT THE HUB
  - ROUTE FEMALE CONNECTION TOWARDS THE BACK OF THE CAB ALONG THE RH FRAME RAIL
  - FEMALE END PLUGS INTO THE P3-A CONNECTION ON THE 123100-096 CAB HARNESS
  - NOTE: THE FUSED RED WIRE IN HARNESS 118650-020 IS NOT USED IN THE PP3 APPLICATION AT THIS TIME





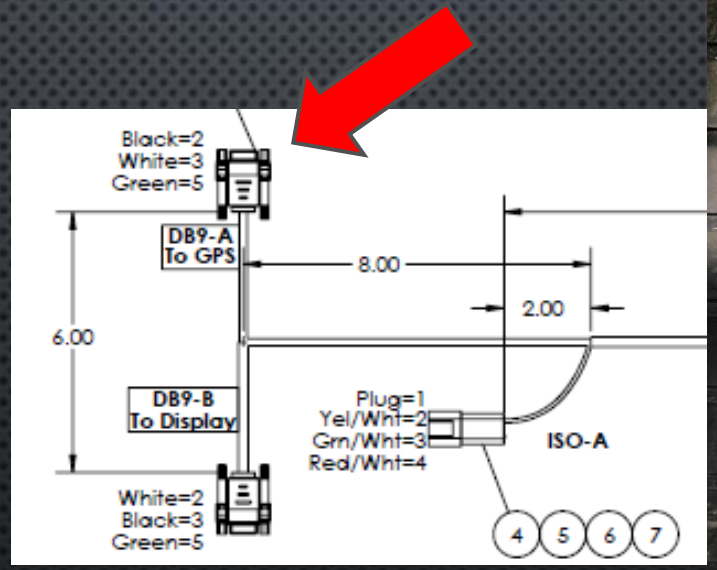
JOHN DEERE 30 SERIES PP3 CAB INTERFACE HARNESSING

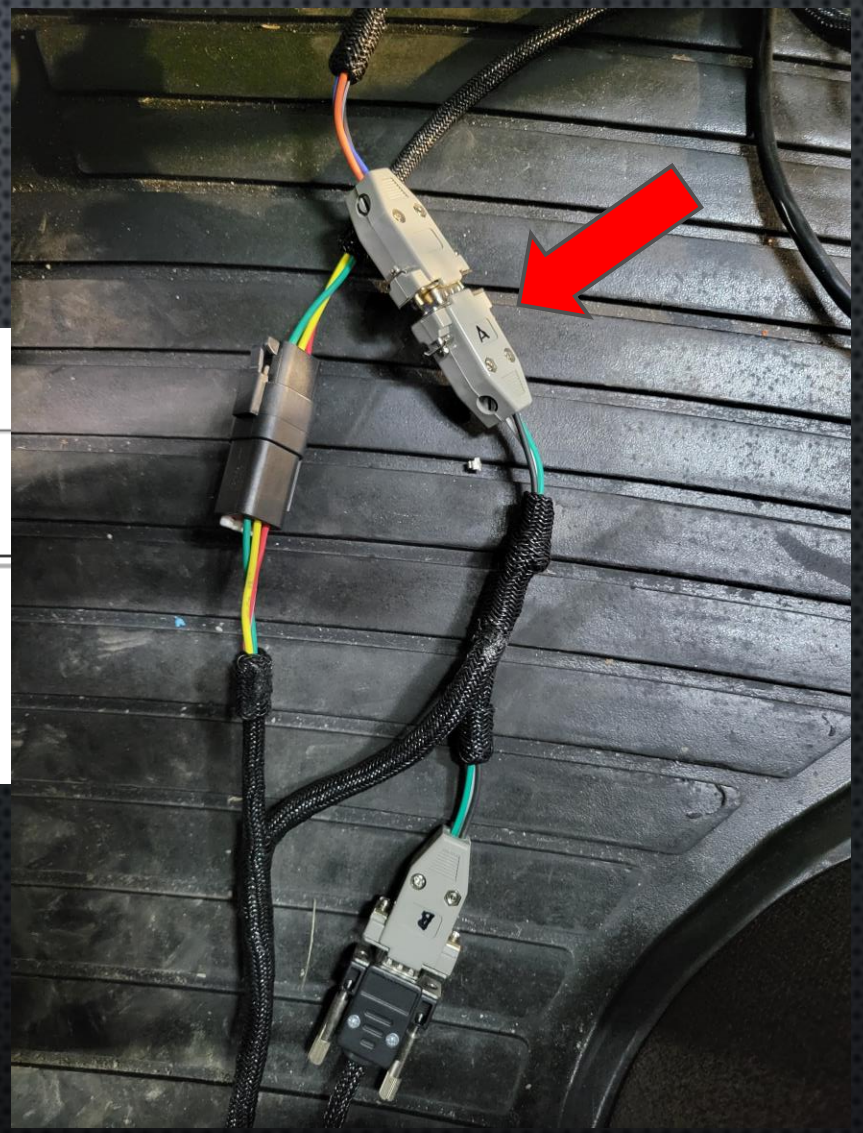


- CAB HARNESS 123100-096
  - ROUTE THE MALE 6 PIN "P3-A" CONNECTION OF THE CAB HARNESS OUT OF THE ACCESS HOLE IN THE RIGHT REAR CAB CORNER (SHOWN RIGHT) AND DOWN TO THE RH FRAME RAIL WHERE THE 6 PIN EXTENSION FROM THE HUB WAS ROUTED
  - UNPLUG EXISTING PP2 DISPLAY EXTENSION (IF APPLICABLE) AND REMOVE
  - RED ARROW REFERENCES THE SAME CONNECTION ON THE HARNESS AND ITS LOCATION ALONG THE RH FRAME

JOHN DEERE 30 SERIES PP3 CAB INTERFACE HARNESSING

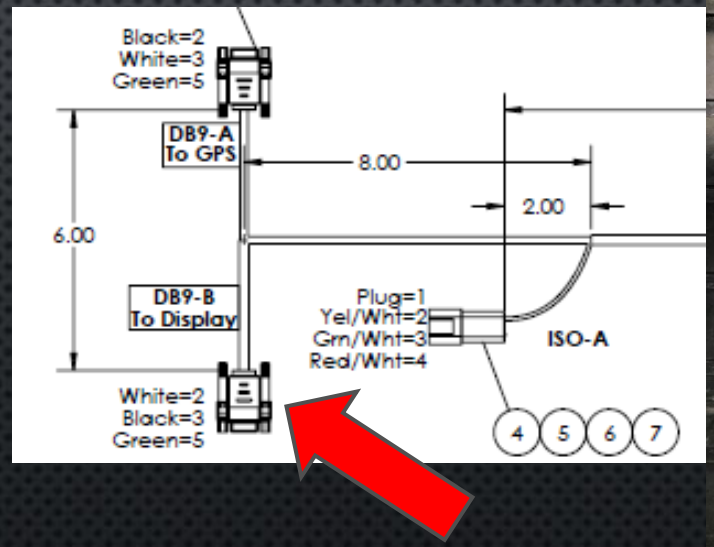
- CAB HARNESS 123100-096
  - ROUTE ALONG RH WINDOW AND NEAR THE POWER STRIP
  - IF JOHN DEERE STARFIRE IS USED TO SUPPLY GPS TO THE DISPLAY, INSTALL THE SERIAL GPS ADAPTER HARNESS FROM THE STARFIRE GLOBE ON TOP OF THE CAB TO THE "DB-9A" SERIAL CONNECTION ON THE CAB HARNESS (RED ARROW)
  - IF THE THIRD PARTY DISPLAY SUPPLIES ITS OWN GPS SOURCE (EXAMPLE AG LEADER 7500 RECEIVER), NEITHER DB9-A OR DB9-B WILL BE USED

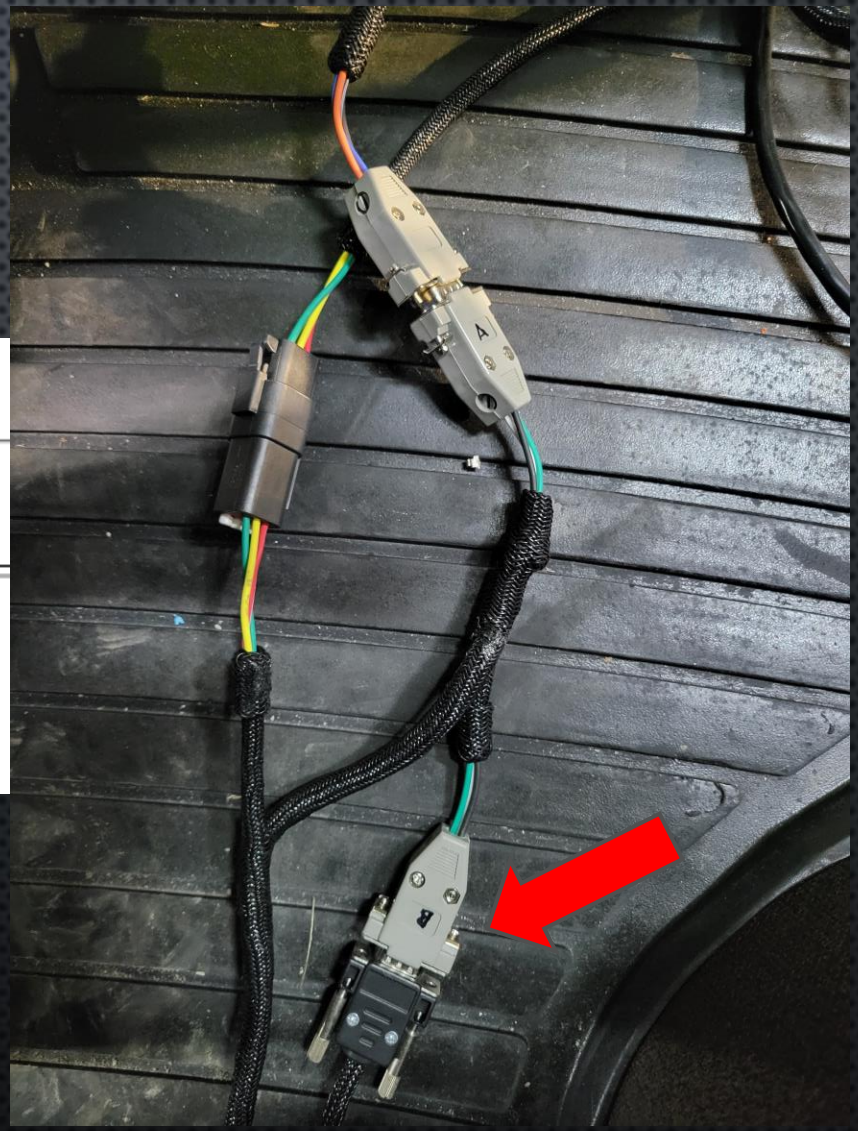




JOHN DEERE 30 SERIES PP3 INTERFACE HARNESSING

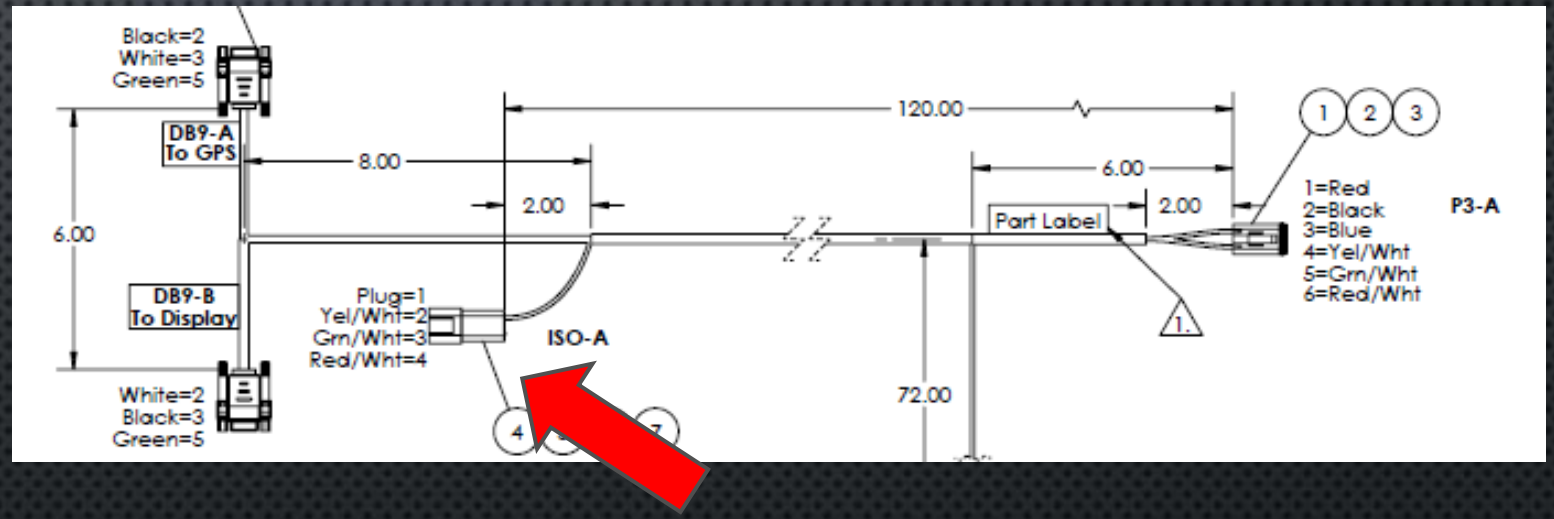
- CAB HARNESS (CONT'D)
  - SERIAL CONNECTION "DB9-B" WILL ONLY BE USED TO EXPORT SERIAL GPS TO JD DISPLAY HARNESS IF USED
  - THIS CONNECTION HAS A NULL MODEM SWAP BUILT IN
  - IF A NON JD DISPLAY IS USED AND SUPPLIES ITS OWN GPS SOURCE (EXAMPLE AG LEADER 7500 RECEIVER), NEITHER DB9-A OR DB9-B WILL BE USED



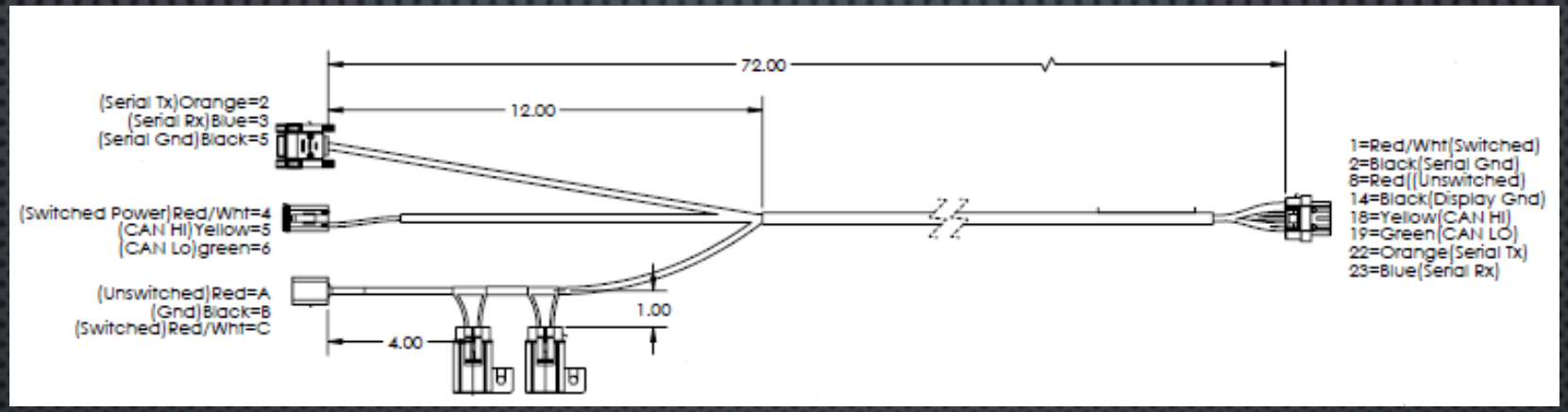


JOHN DEERE 30 SERIES PP3 INTERFACE HARNESSING

- CAB HARNESS (CONT'D)
  - ISO-A CONNECTION WILL BE PLUGGED INTO THE MATING CONNECTION ON EITHER THE JD OR AG LEADER DISPLAY HARNESS (SEE NEXT PAGE)
  - IF ANOTHER DISPLAY IS USED, THIS WILL BE THE CONNECTION TO ADAPT TO



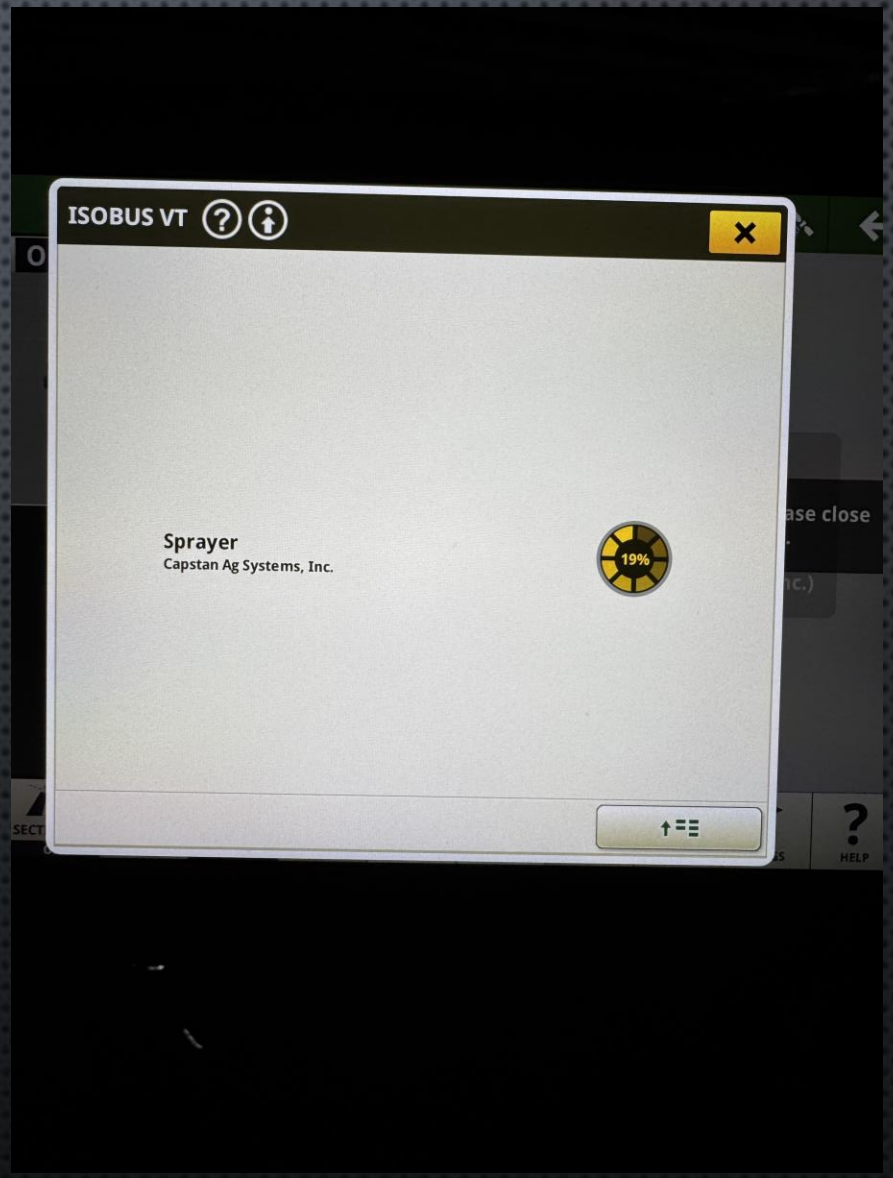
JOHN DEERE 30 SERIES PP3 DISPLAY HARNESSING



- John Deere Displays
  - CapstanAG has designed a simple display harness (PN 123100-103 shown above) to interface from the PP3 cab harness to John Deere displays
  - This harness connects the John Deere display to the "ISO-A" 6 pin cab harness connector, the "DB9-B" serial connection for serial GPS, and power strip found in John Deere cabs.
- Ag Leader Displays
  - The CapstanAG cab harness "ISO-A" 6 pin connection will connect directly to Ag Leader Incommand display harnessing with additional adaptation required
  - Serial connections DB9-A and DB9-B will not be used for Ag Leader applications supplied with Ag Leader GPS.

JOHN DEERE 30 SERIES SYSTEM SETUP/PROGRAMMING

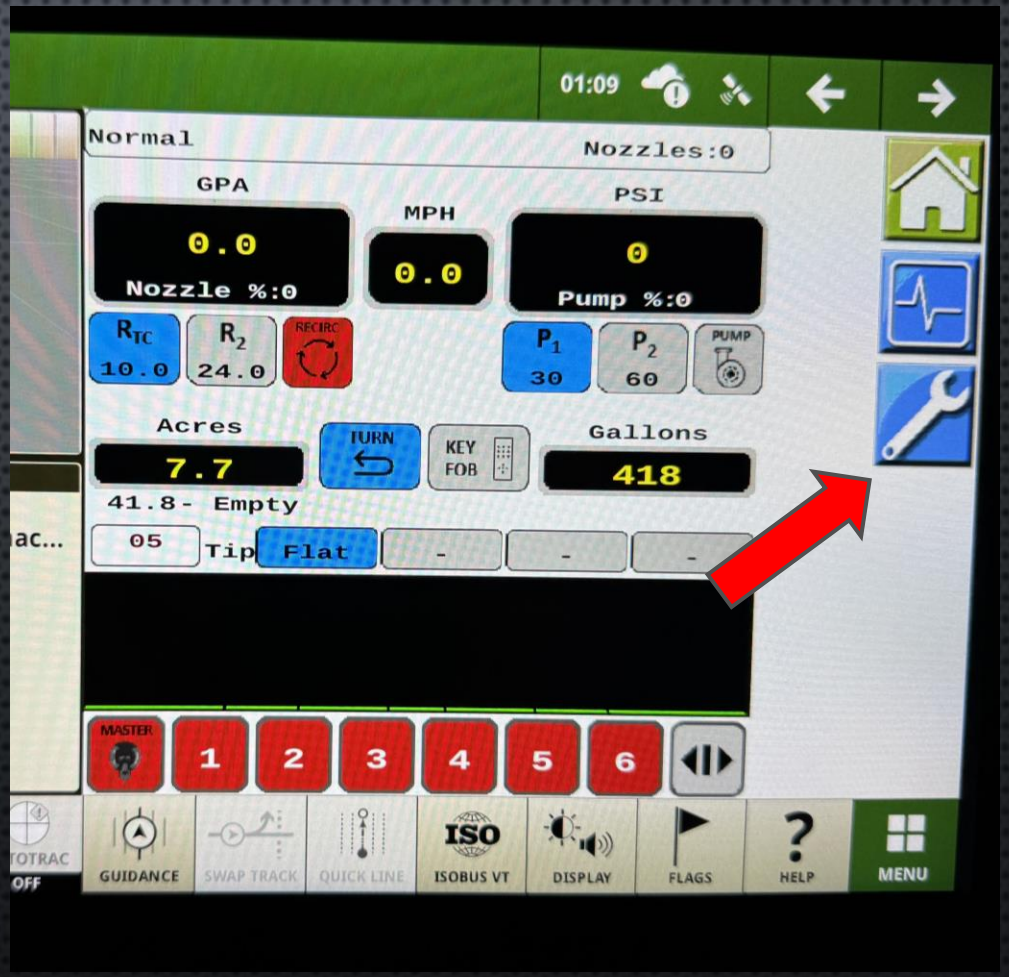
- ISOBUS VT Object Pool Loading
  - Upon first power up, the system will need to load the object pool for the capstan interface
  - This process may take a few minutes to begin
  - Once object pool is finished loading, you may begin setup of the capstan system



JOHN DEERE 30 SERIES SYSTEM SETUP/PROGRAMMING

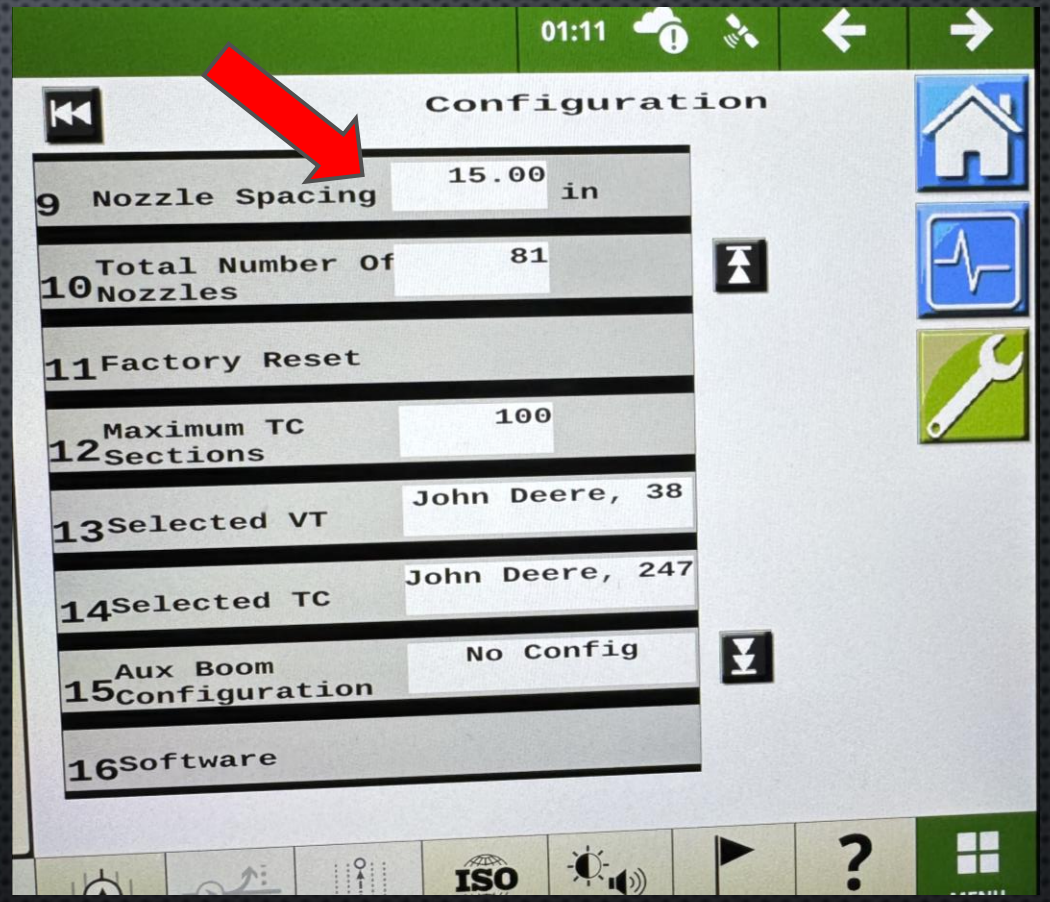
ENTER DEFAULT SETTINGS SHOWN IN THE FOLLOWING SLIDES UNLESS OTHERWISE NOTED

- SYSTEM SETUP
  - NAVIGATE TO THE WRENCH ICON



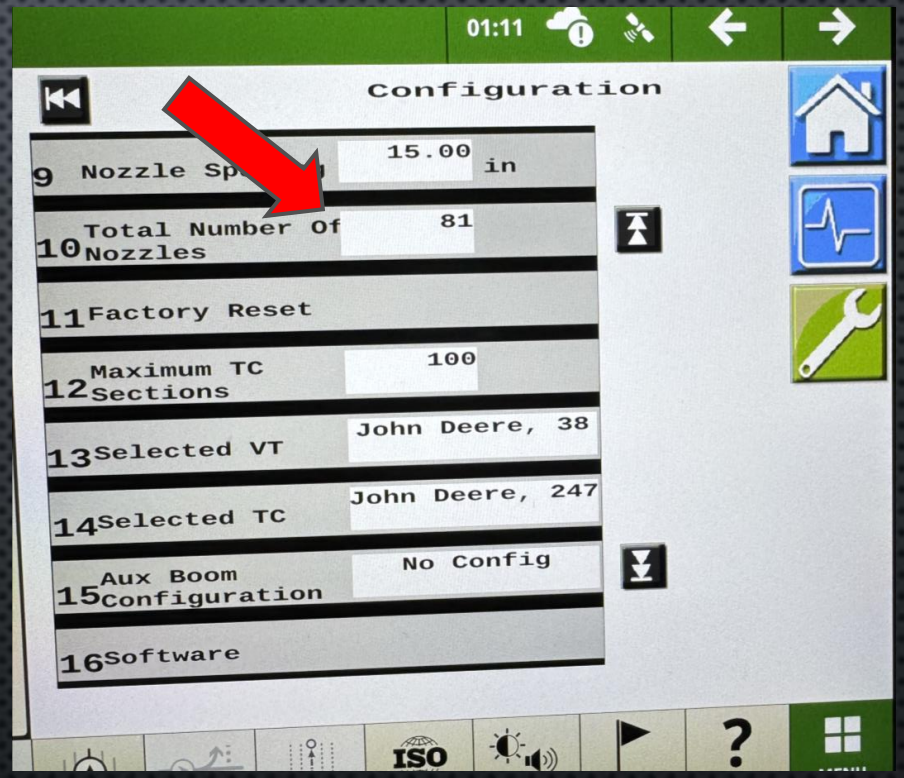
JOHN DEERE 30 SERIES SYSTEM SETUP/PROGRAMMING

- SET NOZZLE SPACING
  - FACTORY 15" JOHN DEERE MACHINES USE FEWER NOZZLES THAT DO NOT ENTIRELY COVER THE BOOM WIDTH (EXAMPLE: 100' BOOMS HAVE 79 NOZZLES COVERING 98.75' RATHER THAN THE FULL 100'). FOR THIS INSTANCE, SET NOZZLE SPACING AT 15"
  - ON OCCASION, SOME OWNERS HAVE ADDED 2 MORE NOZZLES TO THE BOOM TO ASSURE COVERAGE ON THE BOOM ENDS (EXAMPLE: 100' BOOM WITH 81 NOZZLES COVERING 101.25'). IN THESE INSTANCES, ADJUST THE SPACING DOWN SLIGHTLY TO ELIMINATE THE POTENTIAL FOR A FLICKER OF THE OUTSIDE NOZZLE THAT WILL BE PASSING OVER THE SAME AREA TWICE.
    - TAKE THE BOOM WIDTH IN INCHES AND DIVIDE BY THE NUMBER OF TOTAL NOZZLES TO COME UP WITH THE REVISED SPACING.
    - DUE TO ROUNDING, A NUMBER HIGHER OR LOWER MAY NEED TO BE ENTERED (EXAMPLE 14.86" MAY NEED TO BE ENTERED TO ACHIEVE A SPACING OF 14.84")



JOHN DEERE 30 SERIES SYSTEM SETUP/PROGRAMMING

- VERIFY NUMBER OF NOZZLES
  - THIS SHOULD AUTO-POPULATE AS THE SYSTEM DETECTS THE NUMBER OF VALVES CONNECTED TO THE VCM HARNESSES
  - IF THE NUMBER HERE DOES NOT POPULATE WITH THE CORRECT NUMBER, CHECK FOR VALVE CONNECTION ISSUES OR FAULTY COILS ON VALVES (FOR UPGRADE SYSTEMS)

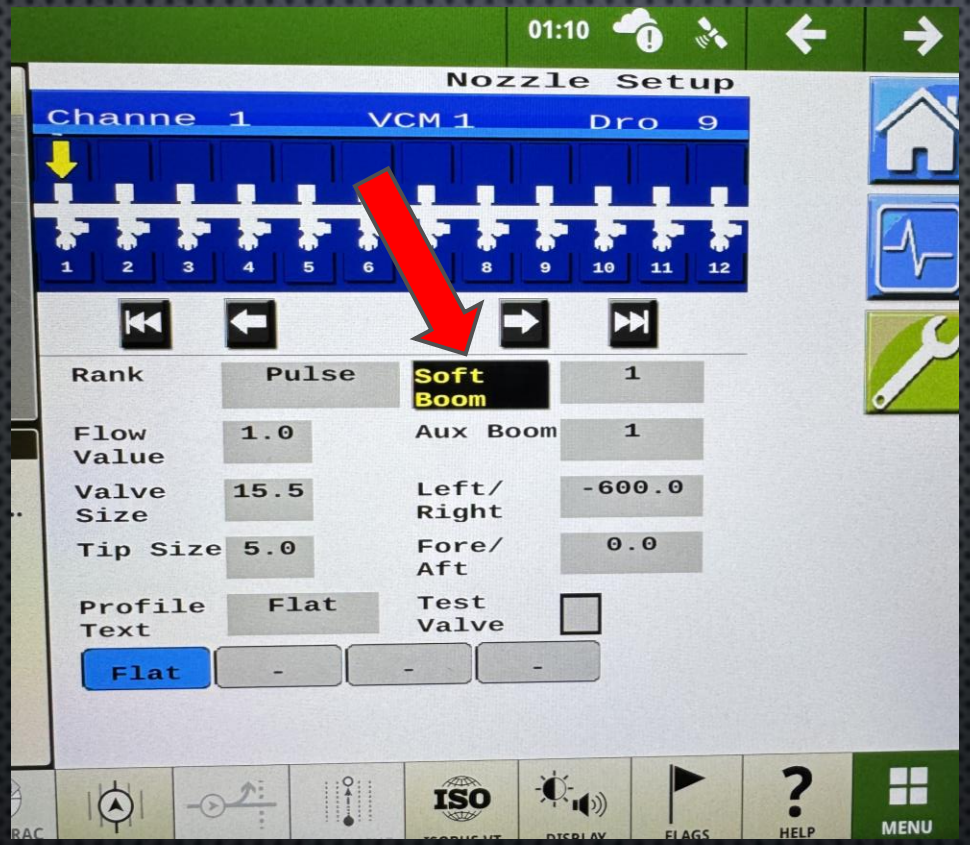


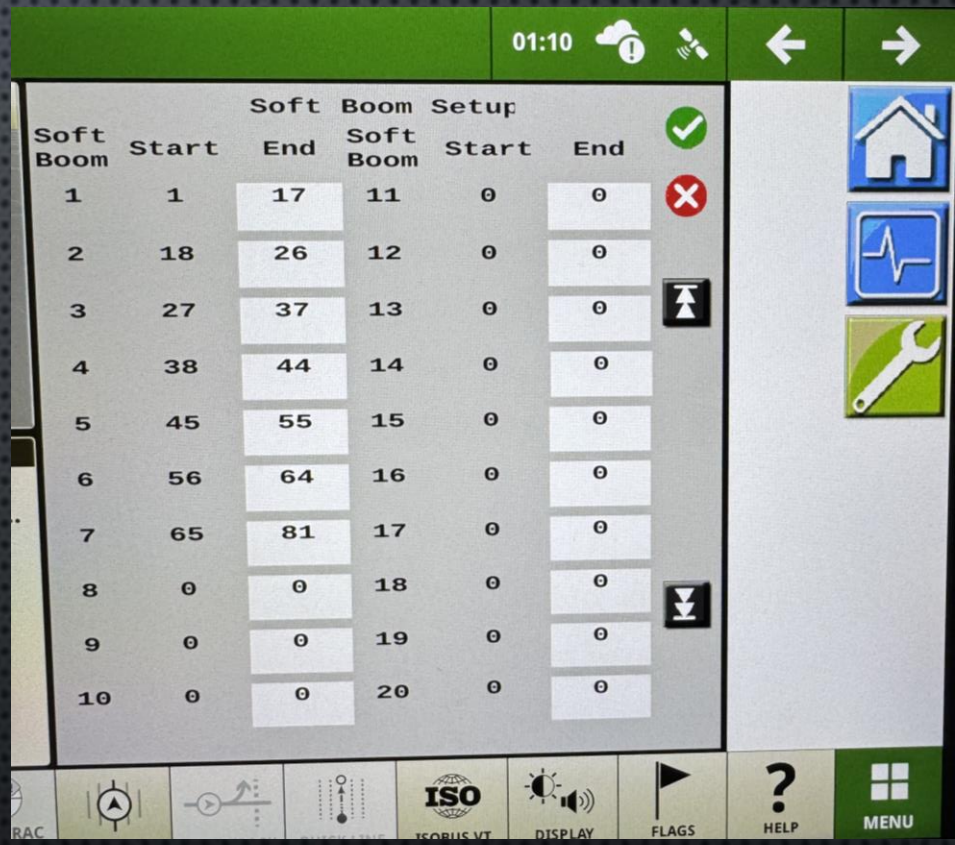
JOHN DEERE 30 SERIES SYSTEM SETUP/PROGRAMMING

- Maximum Task Control Sections
  - Must be equal to or greater than the number of nozzles on the boom
  - The exception being task controllers that will not accept as many nozzles that are on the boom (ex. John Deere 2630 will only accept 16 sections)
  - Confirm with your display manufacturer

JOHN DEERE 30 SERIES SYSTEM SETUP/PROGRAMMING

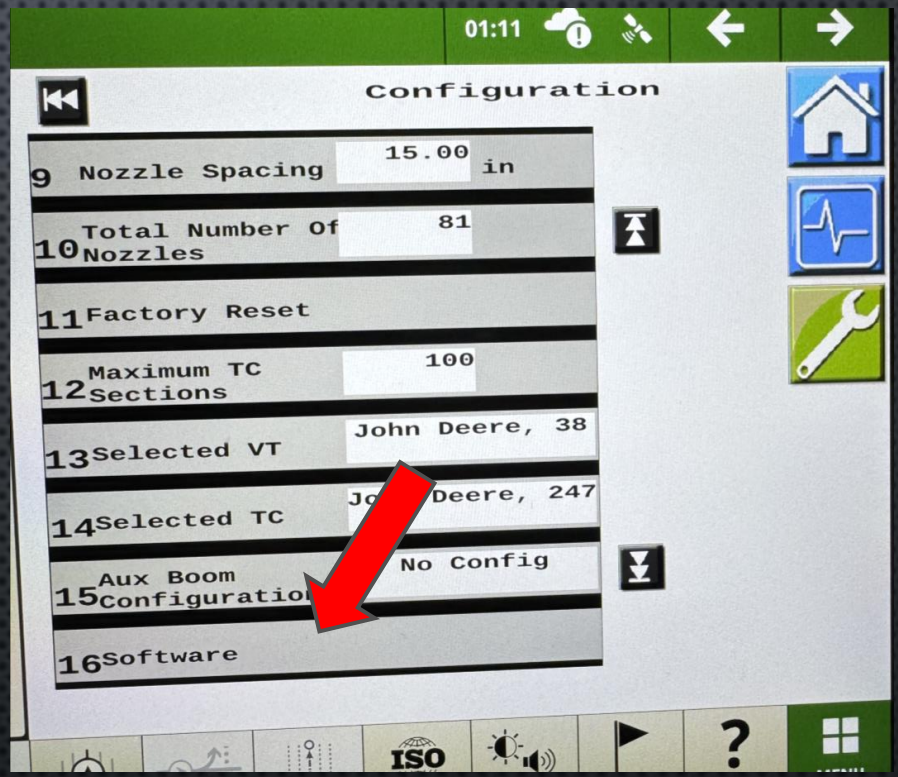
- SOFT BOOM SETUP
  - ASSIGN THE NOZZLES TO THE COORDINATING BOOM SECTION SWITCH FROM THE DEERE BOOM SWITCHES IN THE CAB
  - THIS WILL VARY FOR DIFFERENT BOOM CONFIGURATIONS, 100' 15" BOOM WITH EXTRA END NOZZLES SHOWN HERE
  - BE SURE TO HIT GREEN CHECKMARK AFTER FINSHED





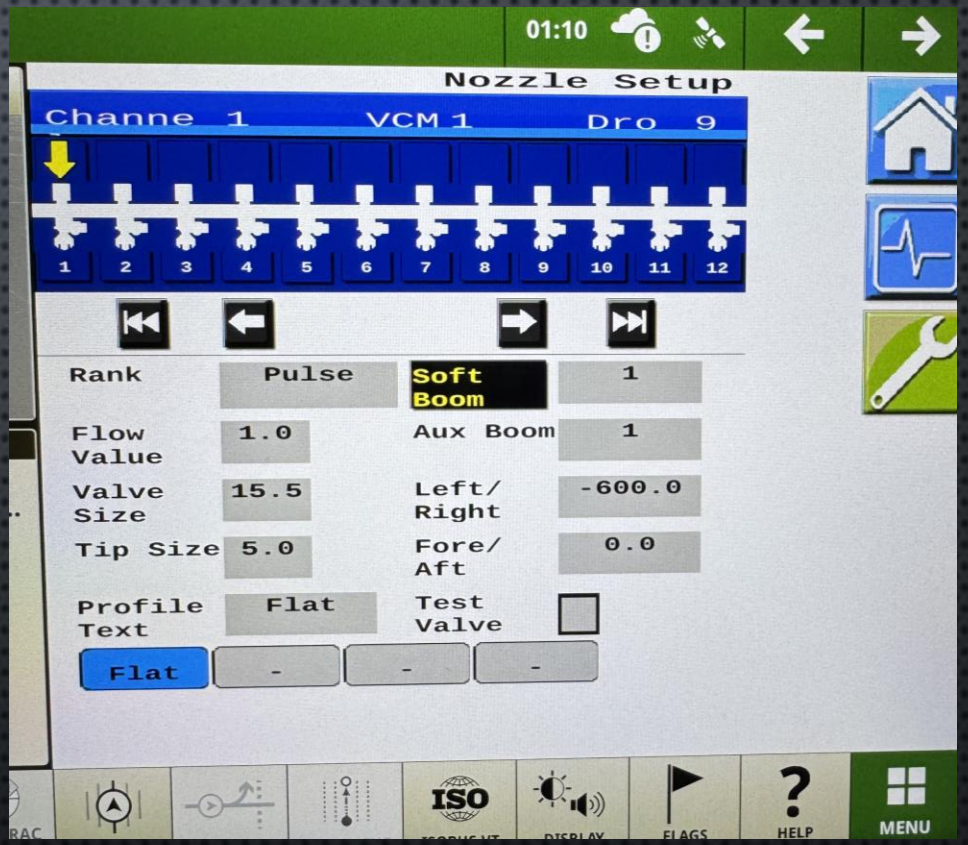
JOHN DEERE 30 SERIES SYSTEM SETUP/PROGRAMMING

- AFTER THESE INITIAL CHANGES, ALWAYS PERFORM A SOFTWARE RESTART TO SEND THE CHANGES TO THE TASK CONTROLLER
- THIS LINE ITEM ON SOME JD DISPLAYS WILL ONLY SAY "SOFTWARE", THE FUNCTION IS THE SAME



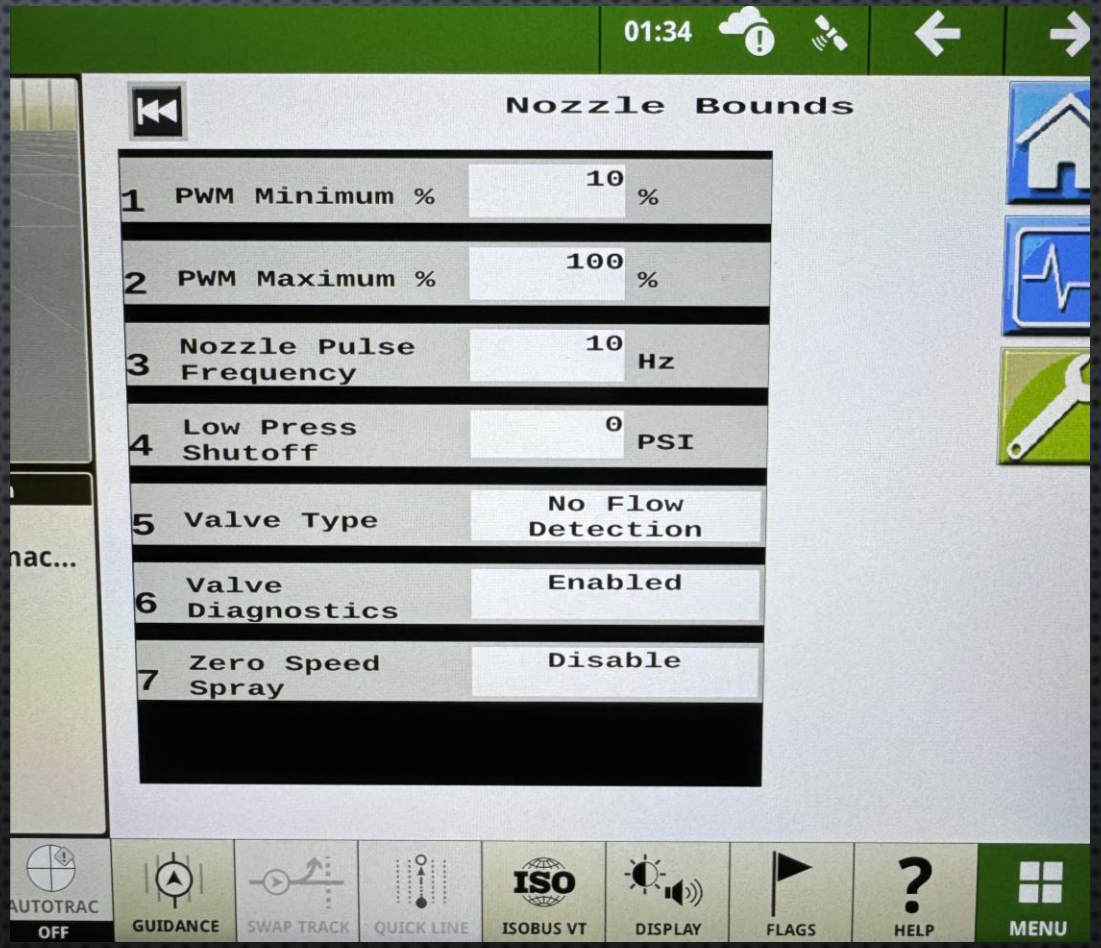
JOHN DEERE 30 SERIES SYSTEM SETUP/PROGRAMMING

- NOZZLE SETUP
  - ADJUST VALVE SIZE
  - ADJUST TIP SIZE
  - AFTER ADJUSTMENT, THE SYSTEM WILL PROMPT YOU TO CONFIRM DEFAULT SELECTION OF NOZZLES ACROSS THE ENTIRE BOOM WIDTH
  - AT THIS TIME, YOU MAY ALTER FLOW VALUES FOR NOZZLES. THESE CAN BE USED TO INCREASE FLOW RATE FOR FENCE ROW, WHEEL TRACK, OR OTHER APPLICATIONS.
  - 4 PRESETS ARE AVAILABLE TO BE RECALLED INSTANTLY FOR CUSTOMIZED APPLICATIONS



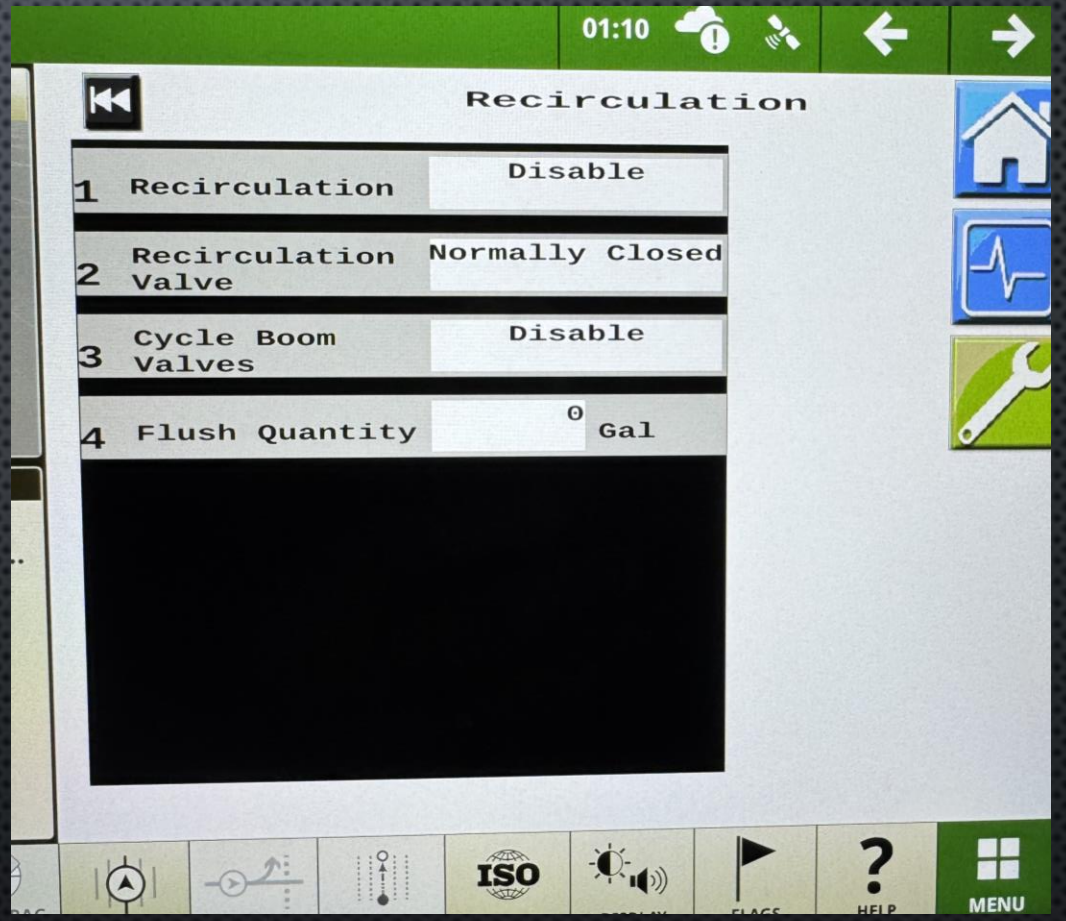
JOHN DEERE 30 SERIES SYSTEM SETUP/PROGRAMMING

- NOZZLE BOUNDS
  - VERIFY DEFAULT SETTINGS AS SHOWN



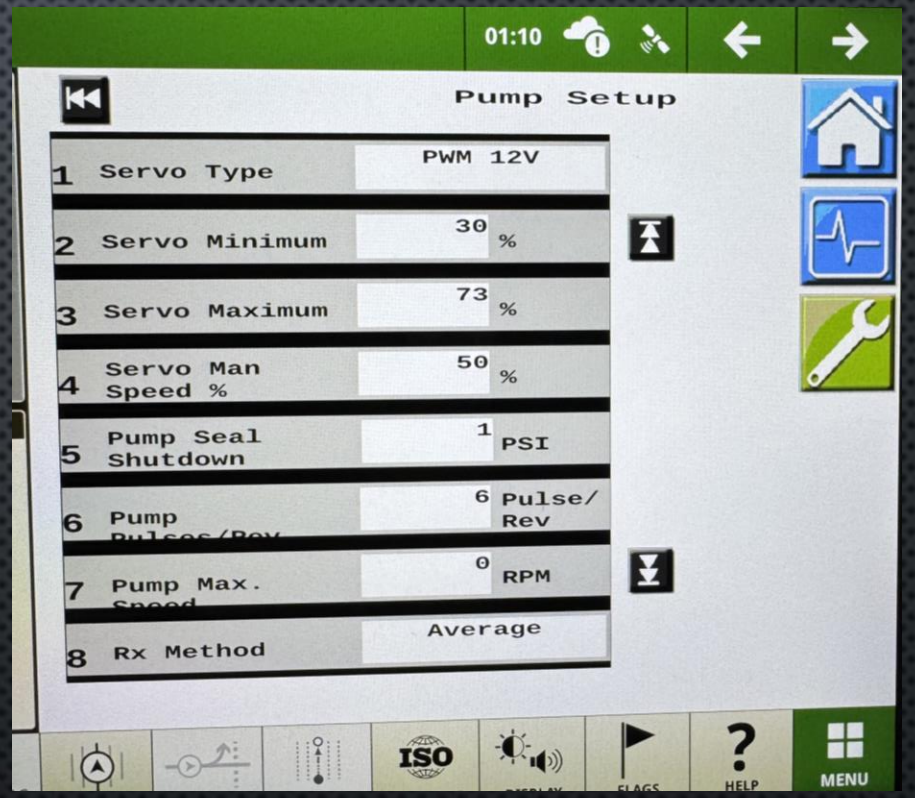
JOHN DEERE 30 SERIES SYSTEM SETUP/PROGRAMMING

- RECIRCULATION
  - VERIFY DEFAULT SETTINGS AS SHOWN
  - IF AFTERMARKET RECIRCULATION IS USED ON THE MACHINE, ENABLE AND SET VALVE SETTING TO YOUR PREFERRED OPERATION MODE



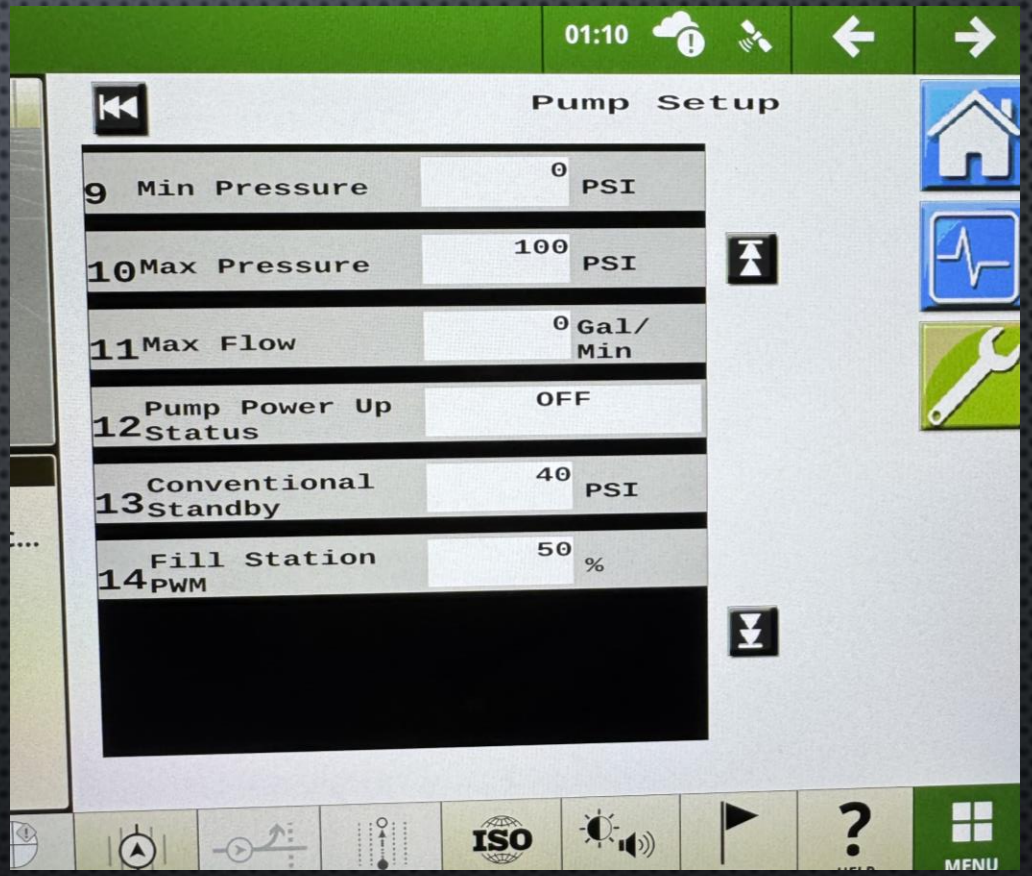
JOHN DEERE 30 SERIES SYSTEM SETUP/PROGRAMMING

- Pressure Menu
  - Pump Setup
  - Servo min/max are found in the original JD spraystar controller setup
  - These numbers will be the first two digits of the solution pump cal number in the JD controller (Using the example to the left this would be a minimum of 29% and maximum of 73
  - Example to the right was slightly different than the example to the left (different machines)



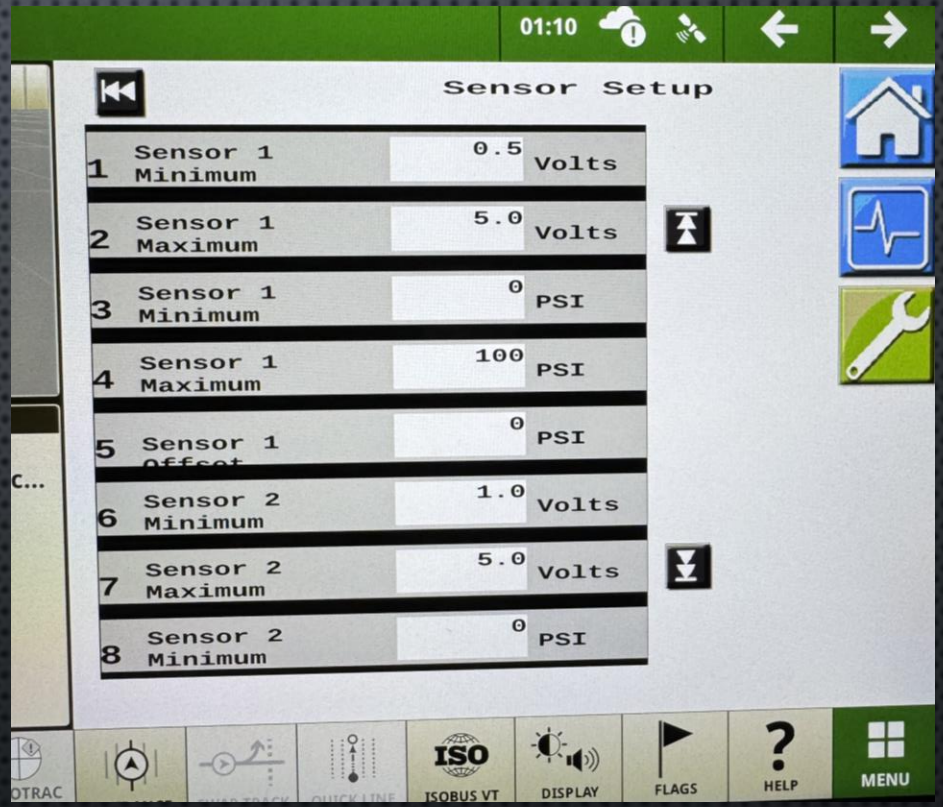
JOHN DEERE 30 SERIES SYSTEM SETUP/PROGRAMMING

- PRESSURE MENU
  - PUMP SETUP (PAGE 2)



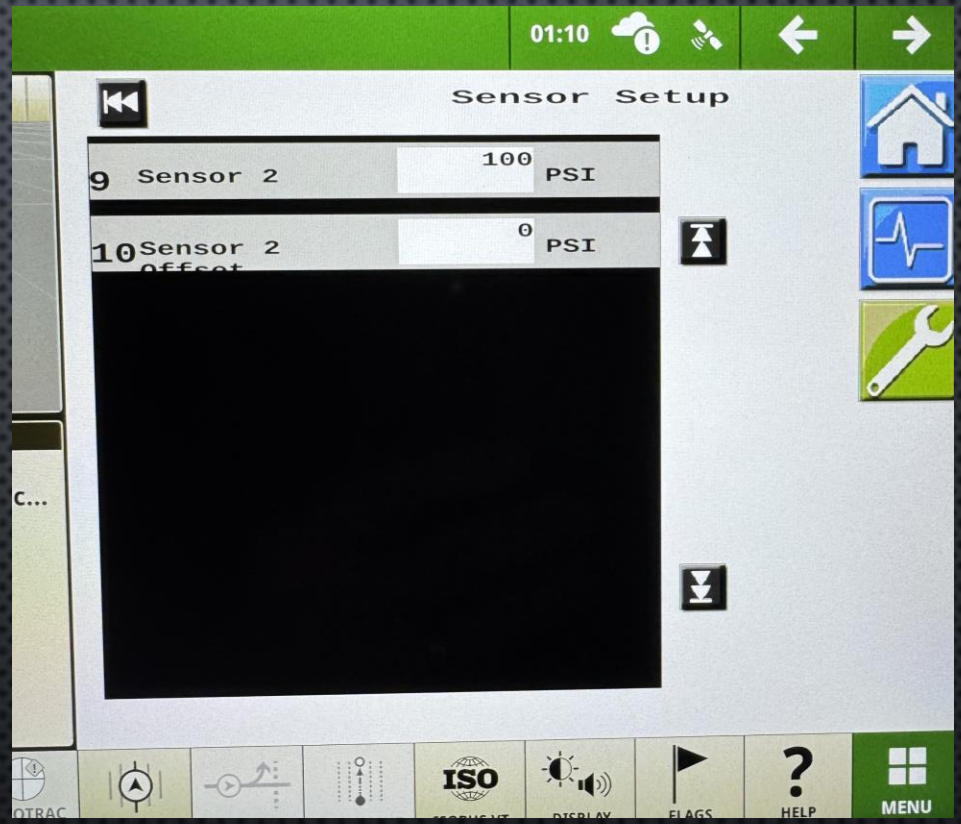
JOHN DEERE 30 SERIES SYSTEM SETUP/PROGRAMMING

- PRESSURE MENU
  - SENSOR SETUP



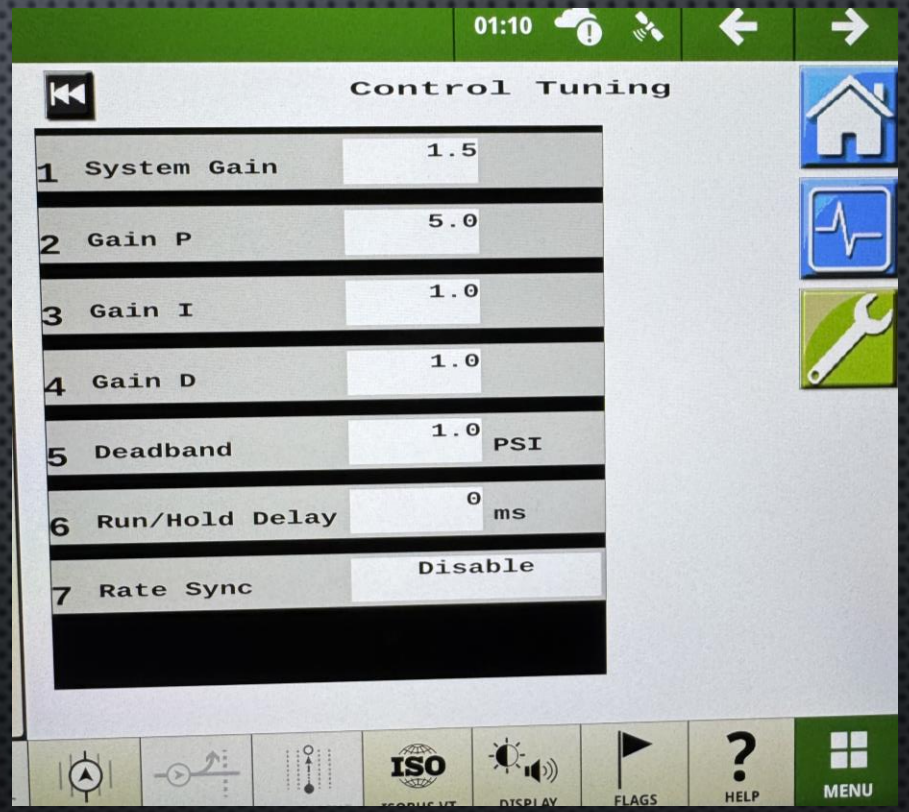
JOHN DEERE 30 SERIES SYSTEM SETUP/PROGRAMMING

- PRESSURE MENU
  - SENSOR SETUP (PAGE 2)



JOHN DEERE 30 SERIES SYSTEM SETUP/PROGRAMMING

- Pressure Menu
  - Control tuning
  - Raise/lower system gain for better Pressure control performance

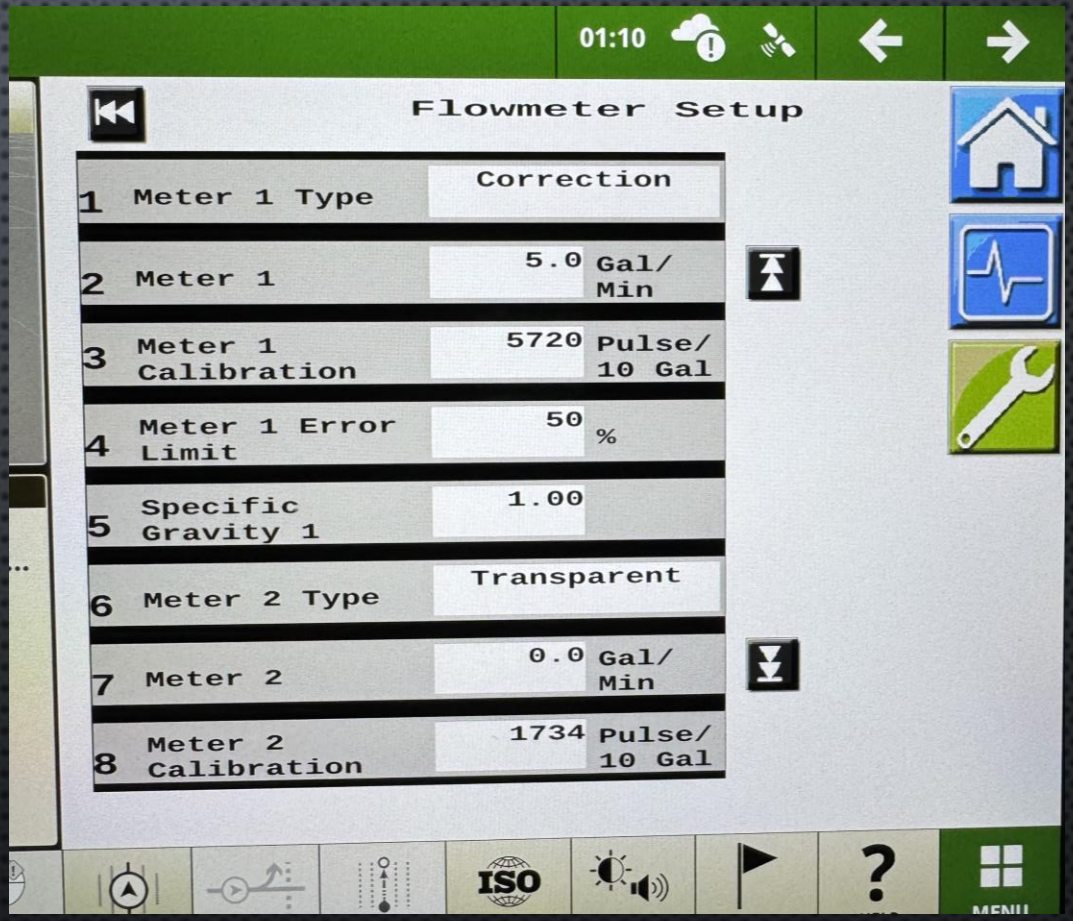


JOHN DEERE 30 SERIES SYSTEM SETUP/PROGRAMMING

- Flow Menu
  - The flow menu page does have a few settings that should be verified or adjusted if desired
  - Unexpected flow deadband should be set to 0Hz for all applications without recirculating boom plumbing
    - A setting of zero will disable the unexpected flow alarm

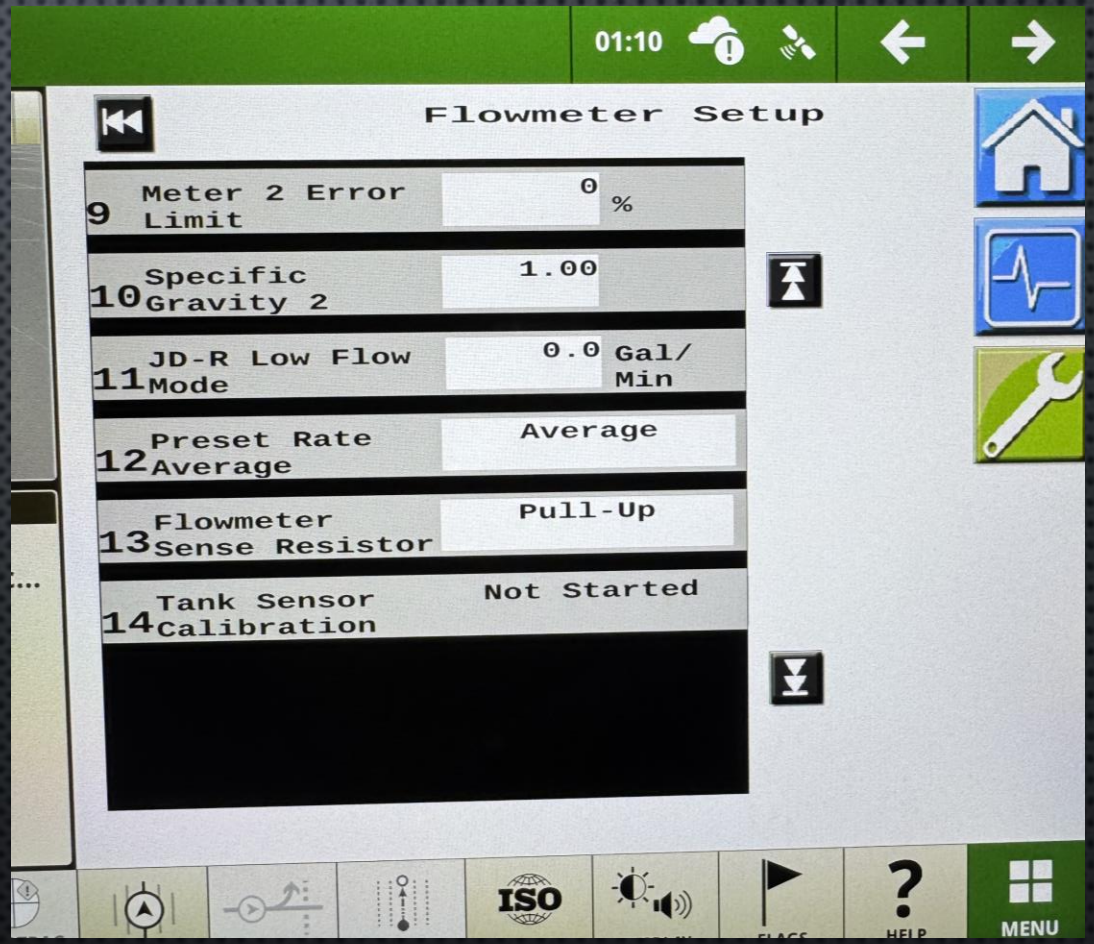
JOHN DEERE 30 SERIES SYSTEM SETUP/PROGRAMMING

- Flow Menu
  - Flowmeter setup
  - Deere flowmeters typically have a steel tag located on the flowmeter that indicates the meter cal
  - In this example, the number on the tag was 572.0
  - Enter the number less the decimal point
  - Meter 2 is not used, this is for a load station flowmeter
  - This is not for use with the high flow meter on some machines



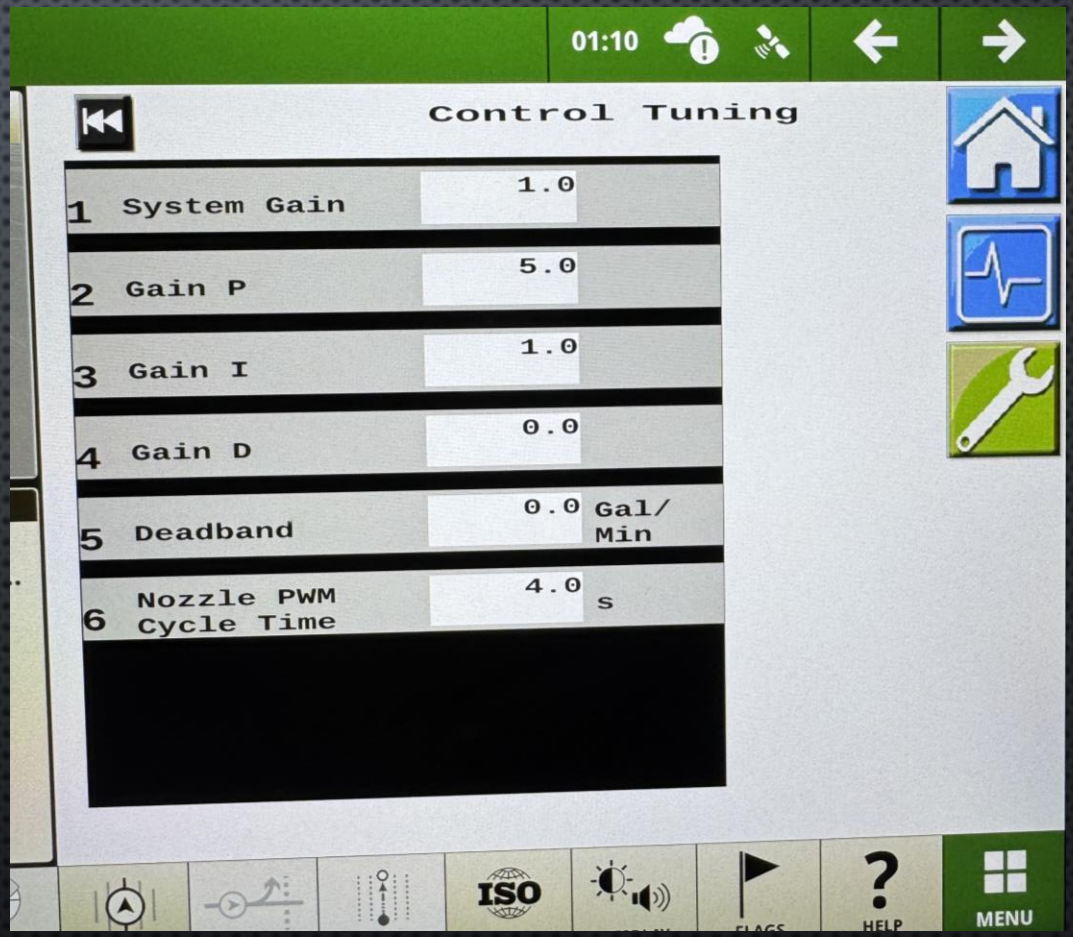
JOHN DEERE 30 SERIES SYSTEM SETUP/PROGRAMMING

- FLOW MENU
  - FLOWMETER SETUP (PAGE 2)
  - METER 2 IS NOT USED
  - FLOWMETER SENSE RESISTOR MAY NEED TO BE SET TO PULL-DOWN ON SOME MACHINES



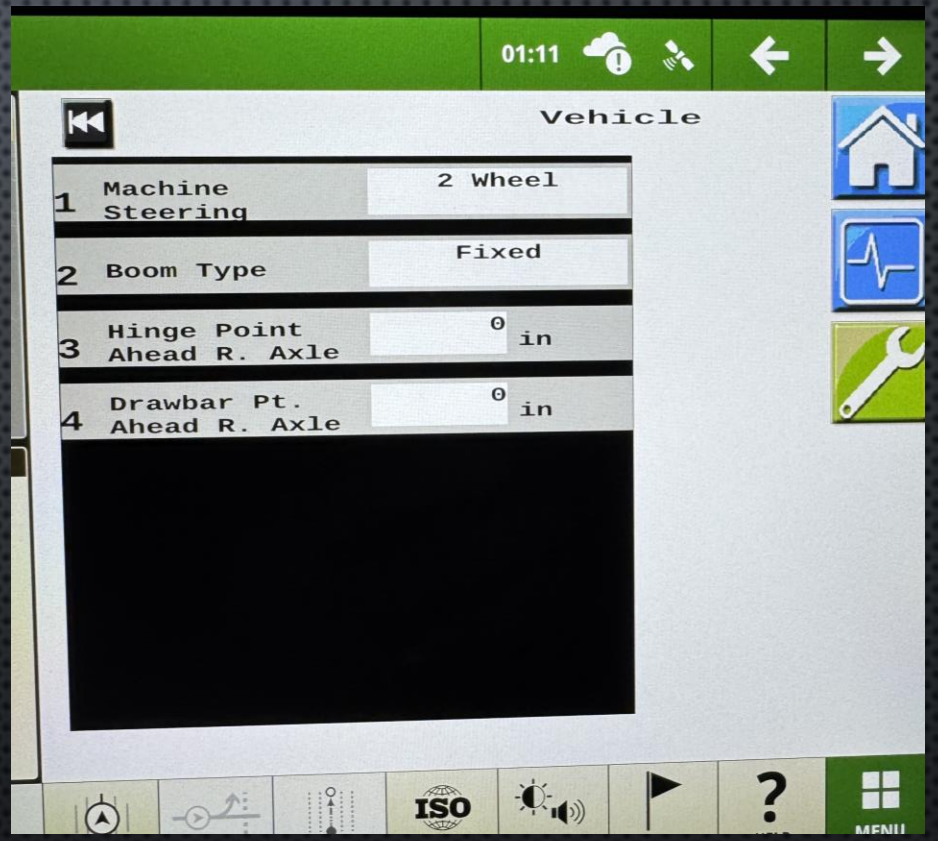
JOHN DEERE 30 SERIES SYSTEM SETUP/PROGRAMMING

- Flow Menu
  - Flow control tuning
  - Adjust system gain up/down to achieve rate control performance



JOHN DEERE 30 SERIES SYSTEM SETUP/PROGRAMMING

- NAVIGATION MENU
  - VEHICLE

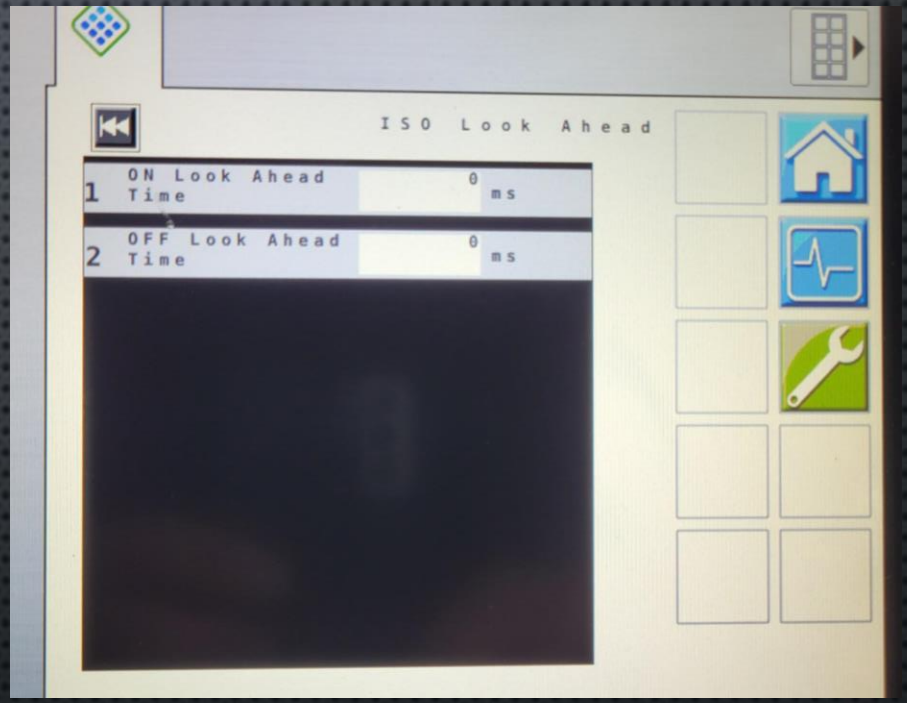


JOHN DEERE 30 SERIES SYSTEM SETUP/PROGRAMMING

- Navigation Menu
  - Implement
  - Measurements shown are from a 4830
  - Be sure both the display and the PP3 system have like measurements

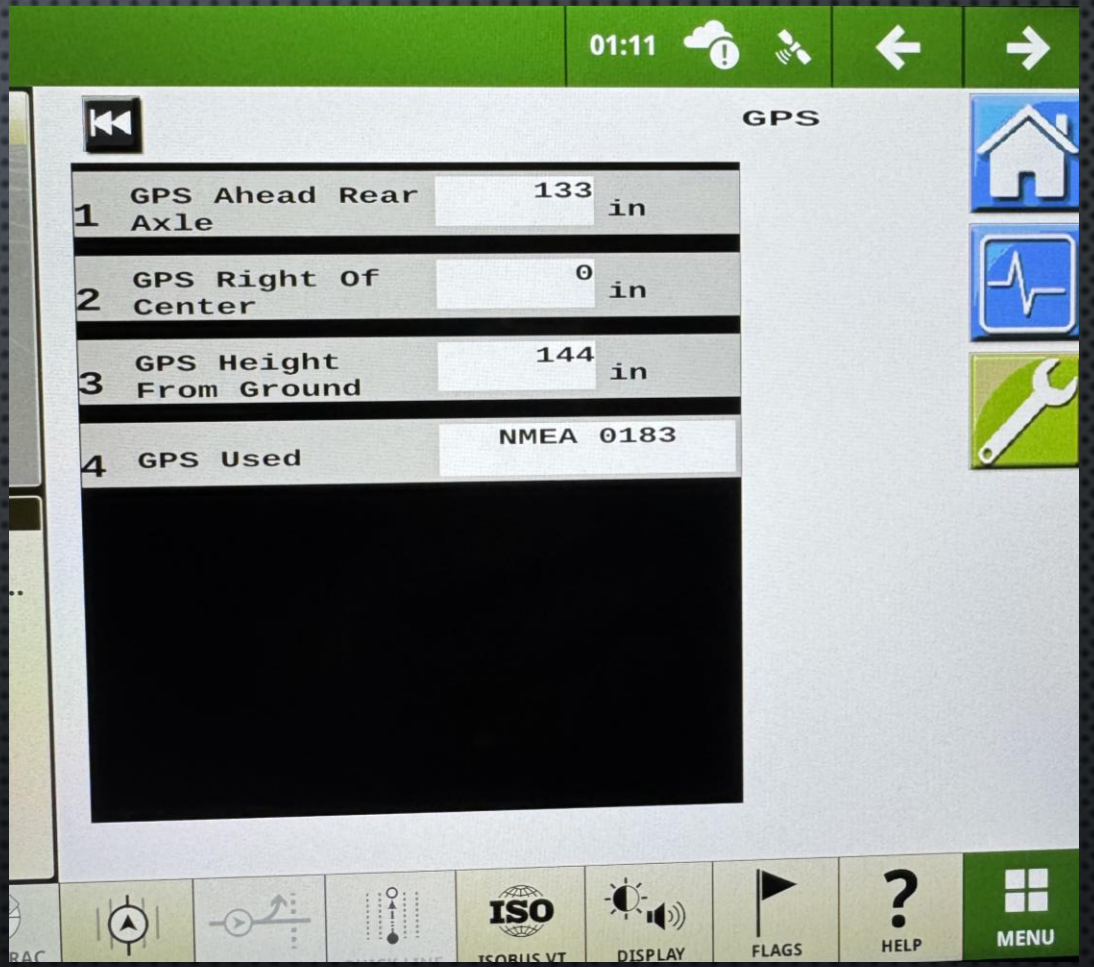
JOHN DEERE 30 SERIES SYSTEM SETUP/PROGRAMMING

- Navigation Menu
  - ISO Look Ahead
  - Set to zero and adjust look ahead in display swath control settings menu



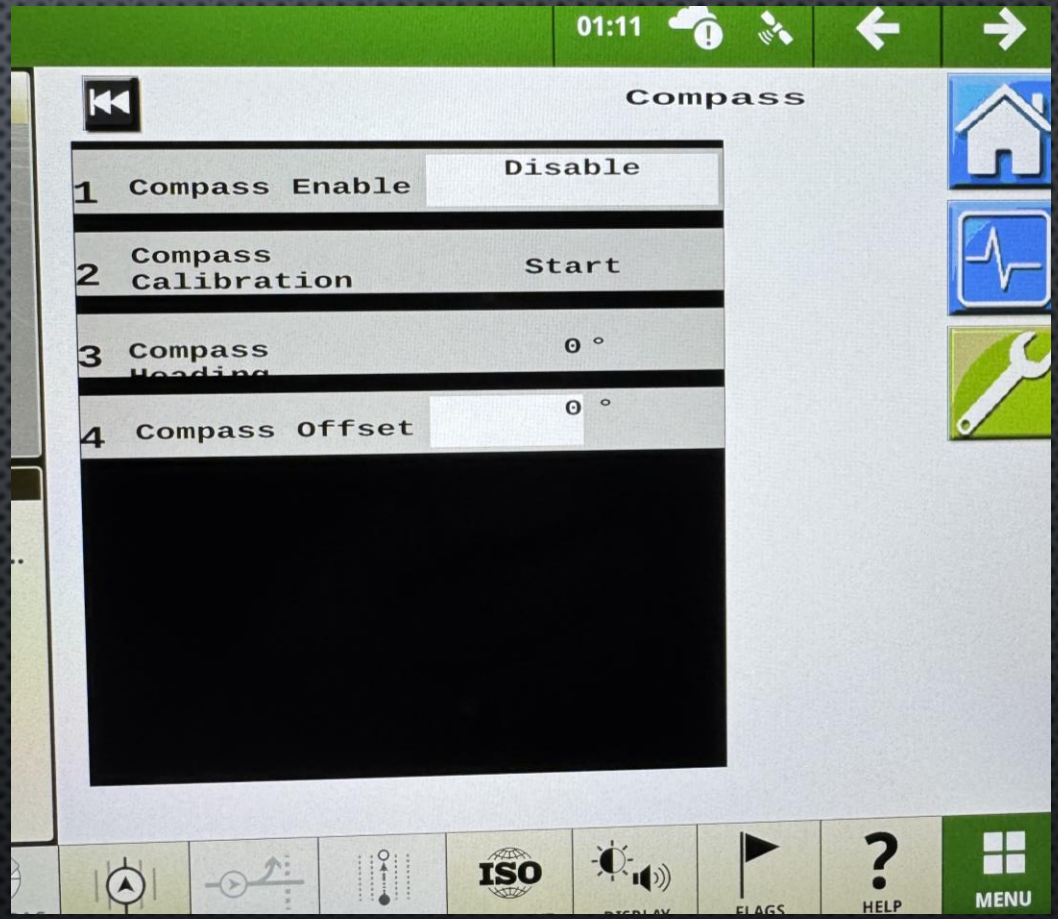
JOHN DEERE 30 SERIES SYSTEM SETUP/PROGRAMMING

- Navigation Menu
  - Implement
  - Measurements are for a JD 4830
  - Be sure both the display and the PP3 system have like measurements
  - GPS used will need to be set correctly for the source of GPS given
  - John Deere GPS fed into a JD display will not export GPS via ISOBUS, we will need to set the "GPS Used" to "SERIAL" or "NMEA 1083"
  - See additional documentation below for setting up GPS on the JD display



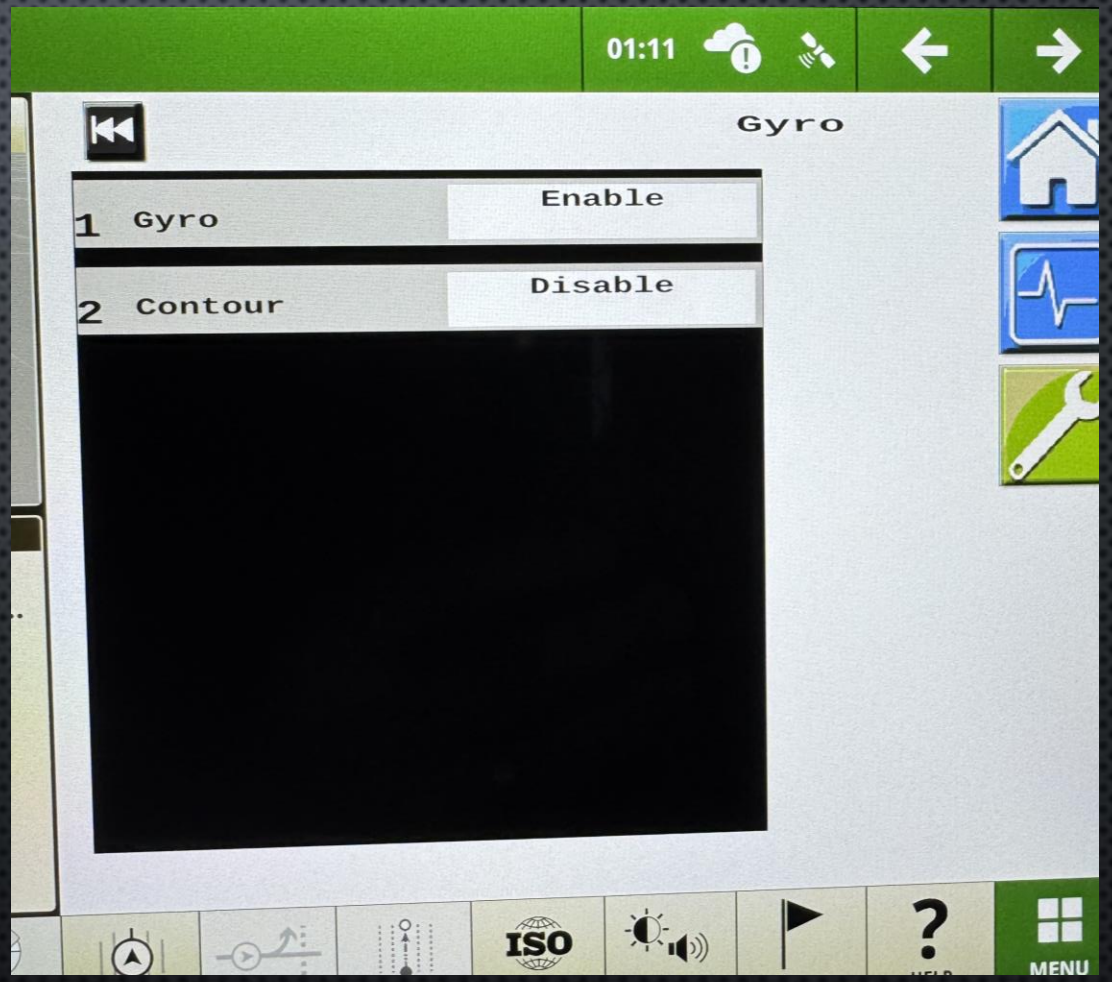
JOHN DEERE 30 SERIES SYSTEM SETUP/PROGRAMMING

- NAVIGATION MENU
  - COMPASS
  - HAVE NOT BEEN UTILIZING COMPASS



JOHN DEERE 30 SERIES SYSTEM SETUP/PROGRAMMING

- Navigation Menu
  - Gyro should be enabled to assist in turn compensation performance

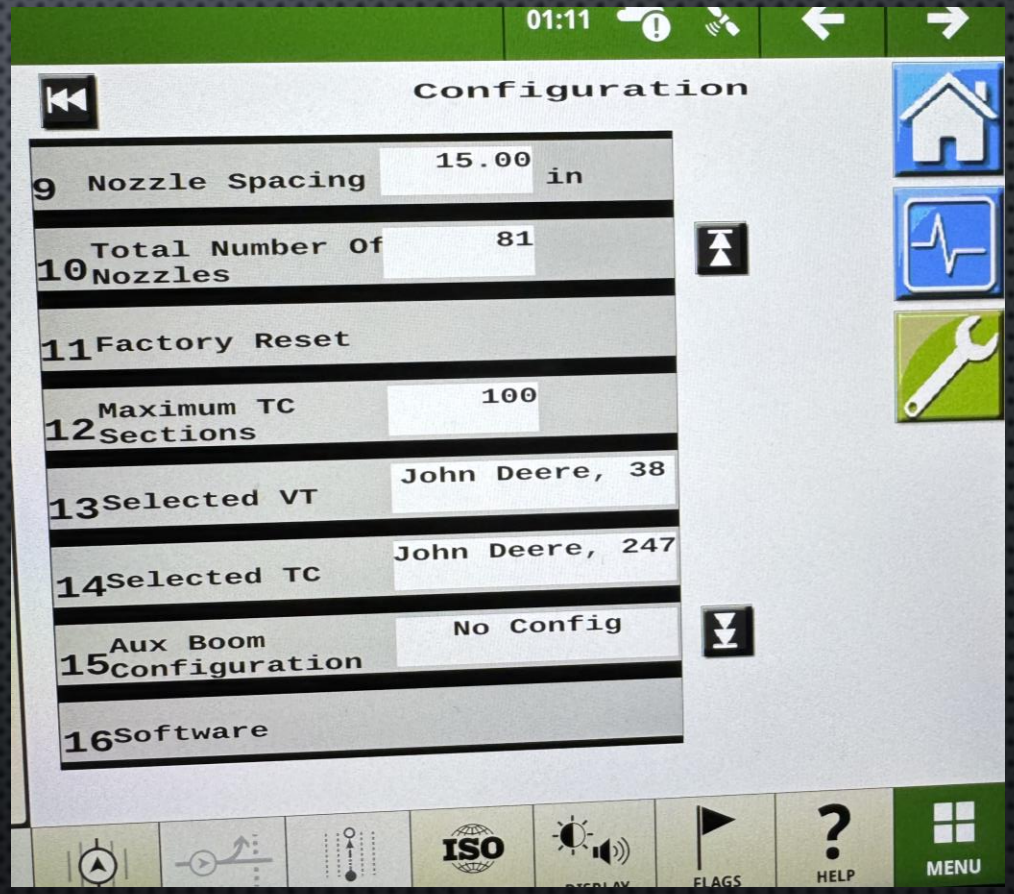


JOHN DEERE 30 SERIES SYSTEM SETUP/PROGRAMMING

- Initial Settings
  - configuration lines 1-8
  - Master switch source needs to be set to "NONE" as the system assumes master switch is on when it sees any boom switch is on
  - Boom switch source needs to be set to "External" in order to see the signals from the wired shut off signals at the boom valves

JOHN DEERE 30 SERIES SYSTEM SETUP/PROGRAMMING

- Initial Settings
  - Configuration Lines 9-16
  - See more details above regarding settings for this page
  - These settings should be adjusted upon initial power up
  - Selected Vt and TC will reflect which displays are available on the ISOBUS,
    - these are set automatically unless more than one Virtual terminal or task controller is present on the connected ISOBUS

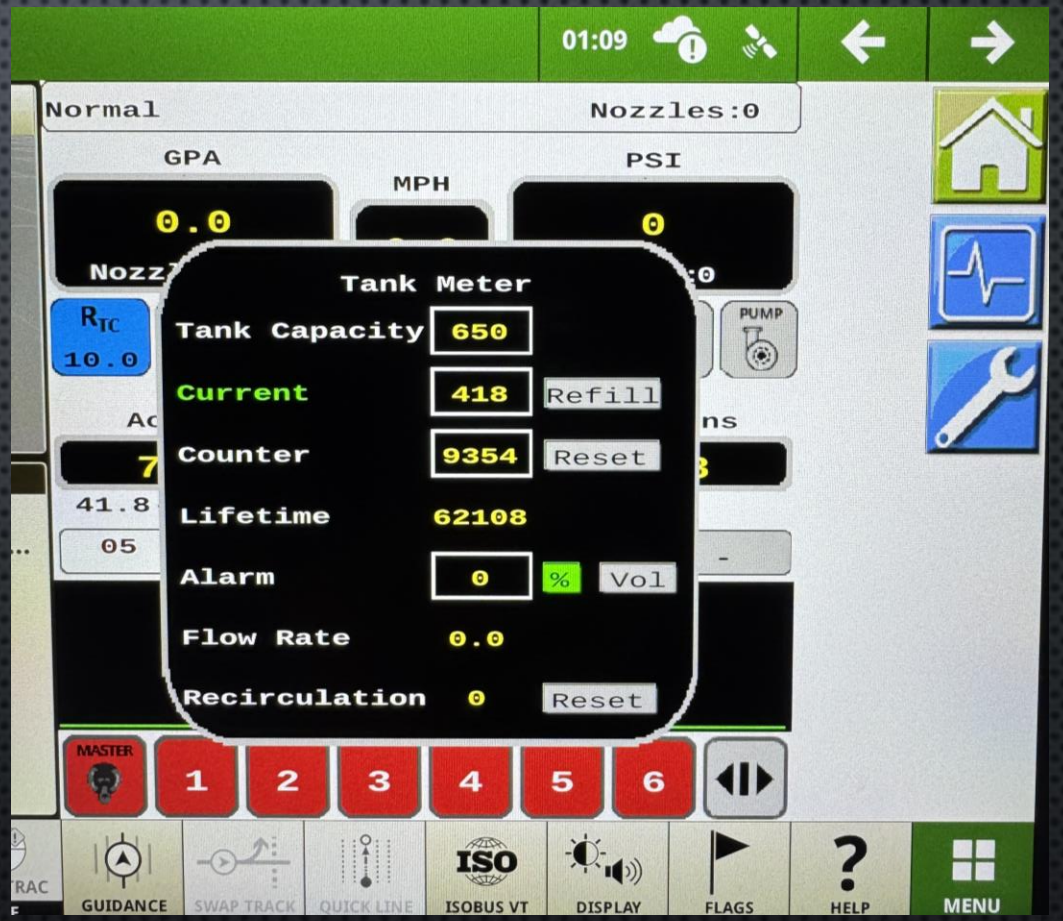


JOHN DEERE 30 SERIES SYSTEM SETUP/PROGRAMMING

- Initial Settings
  - Configuration lines 17-24
  - For John Deere 30 series machines, set the "FILL STATION" line item to "EXTERNAL" to allow use of the existing pump switches on the dash and reload station
  - Operation Note: In order to start the pump on the machine from the cab, the pump switch needs engaged and the master switch needs cycled on (and back off again
  - A machine configuration may be saved at this time. This will allow quick retrieval of settings for future use

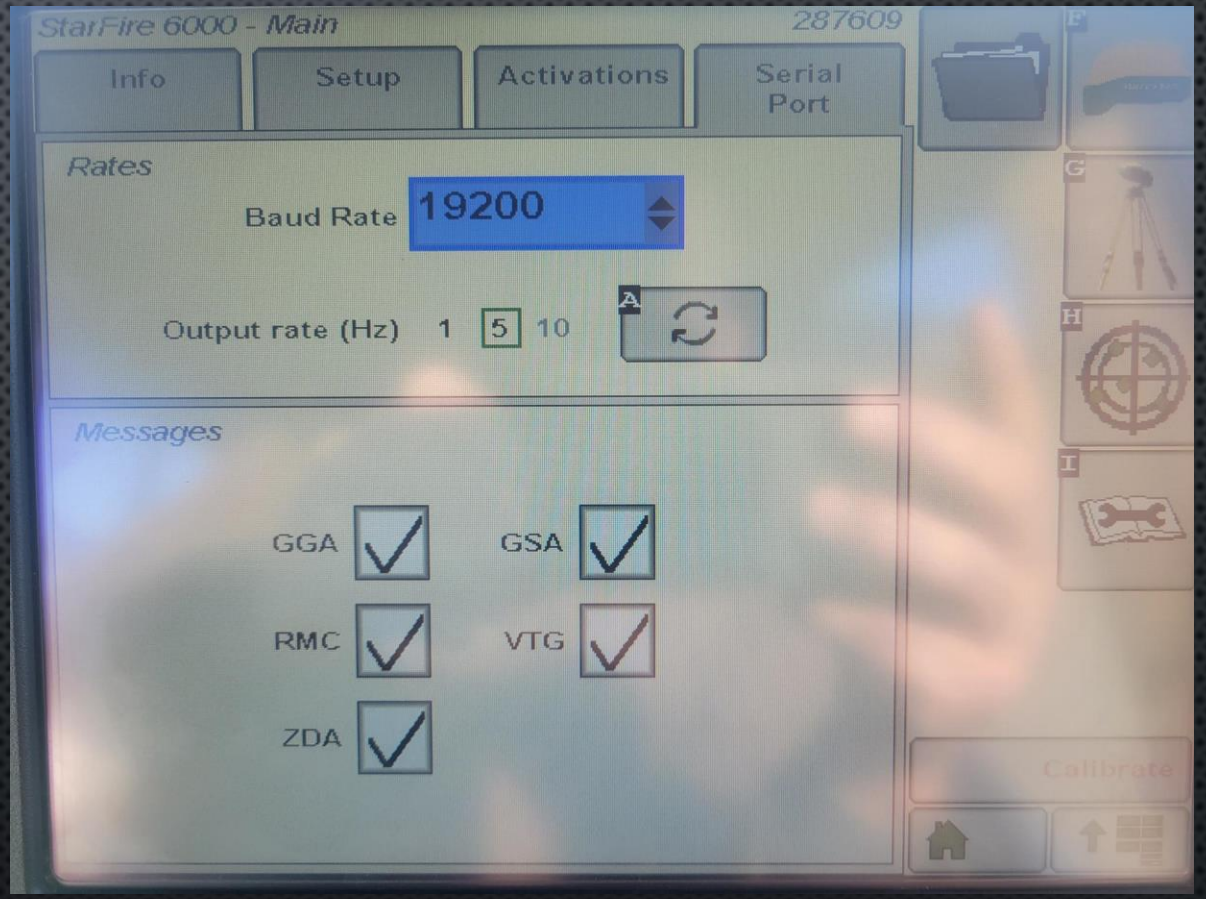
JOHN DEERE 30 SERIES SYSTEM SETUP/PROGRAMMING

- MAIN RUN PAGE
  - OPEN "GALLONS" TAB
  - SET TANK VOLUME TO MATCH MACHINE TANK SIZE OR TYPICAL FILL VOLUME



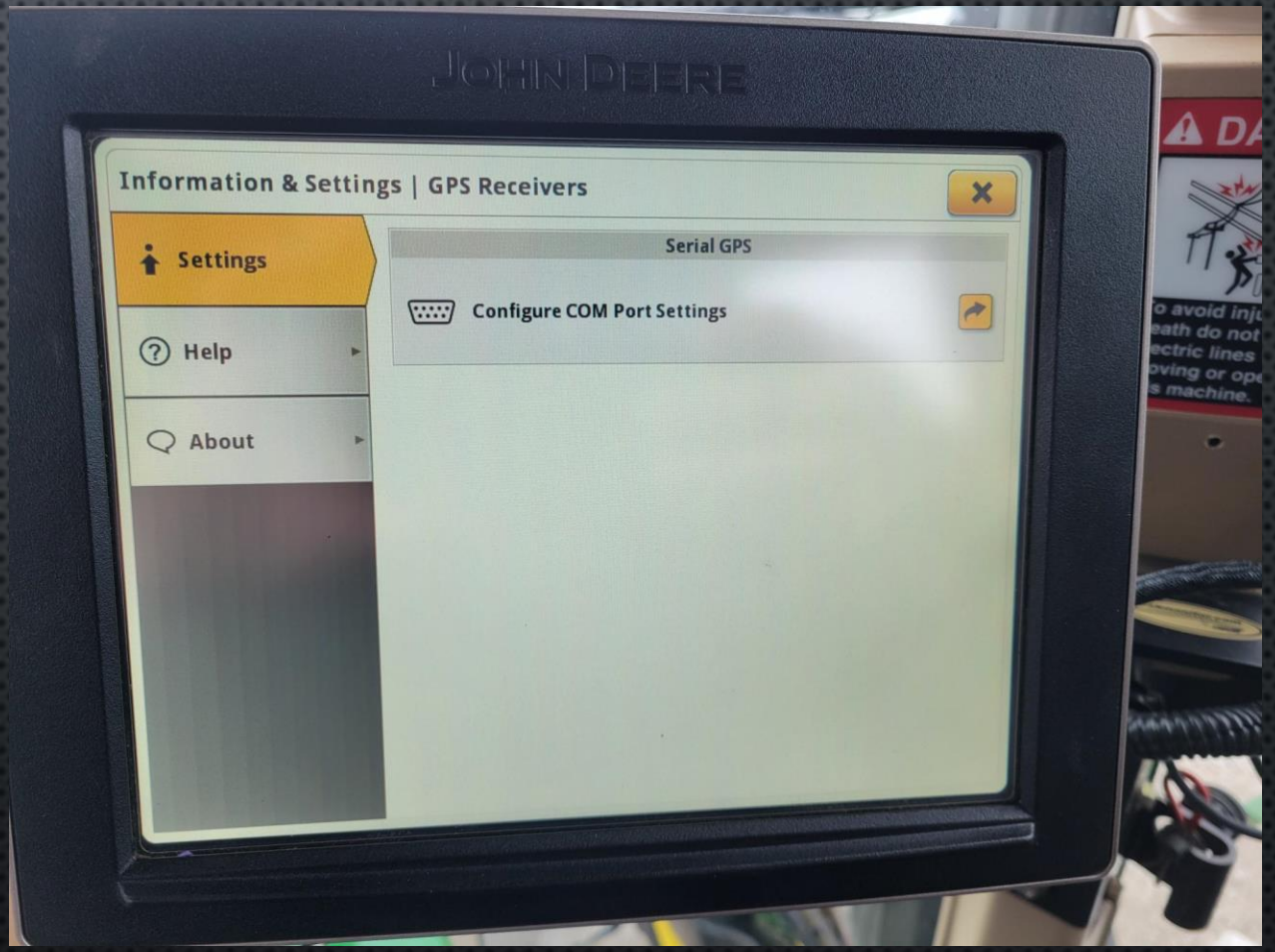
JOHN DEERE 30 SERIES SYSTEM SETUP/PROGRAMMING

- JOHN DEERE DISPLAY SERIAL GPS CONFIGURATION
  - NAVIGATE TO THE STARFIRE APP ON THE MACHINE'S ORIGINAL DISPLAY AND SET SERIAL PORT OUTPUT TO MATCH SETTINGS SHOWN HERE.
  - BAUD AND OUTPUT RATES MUST BE SET TO 19200 AND 5HZ IN ORDER FOR THE SECONDARY DISPLAY THAT'S RUNNING THE ENVELOP TO RECEIVE IT
  - ALL MESSAGE BOXES SHOULD BE CHECKED



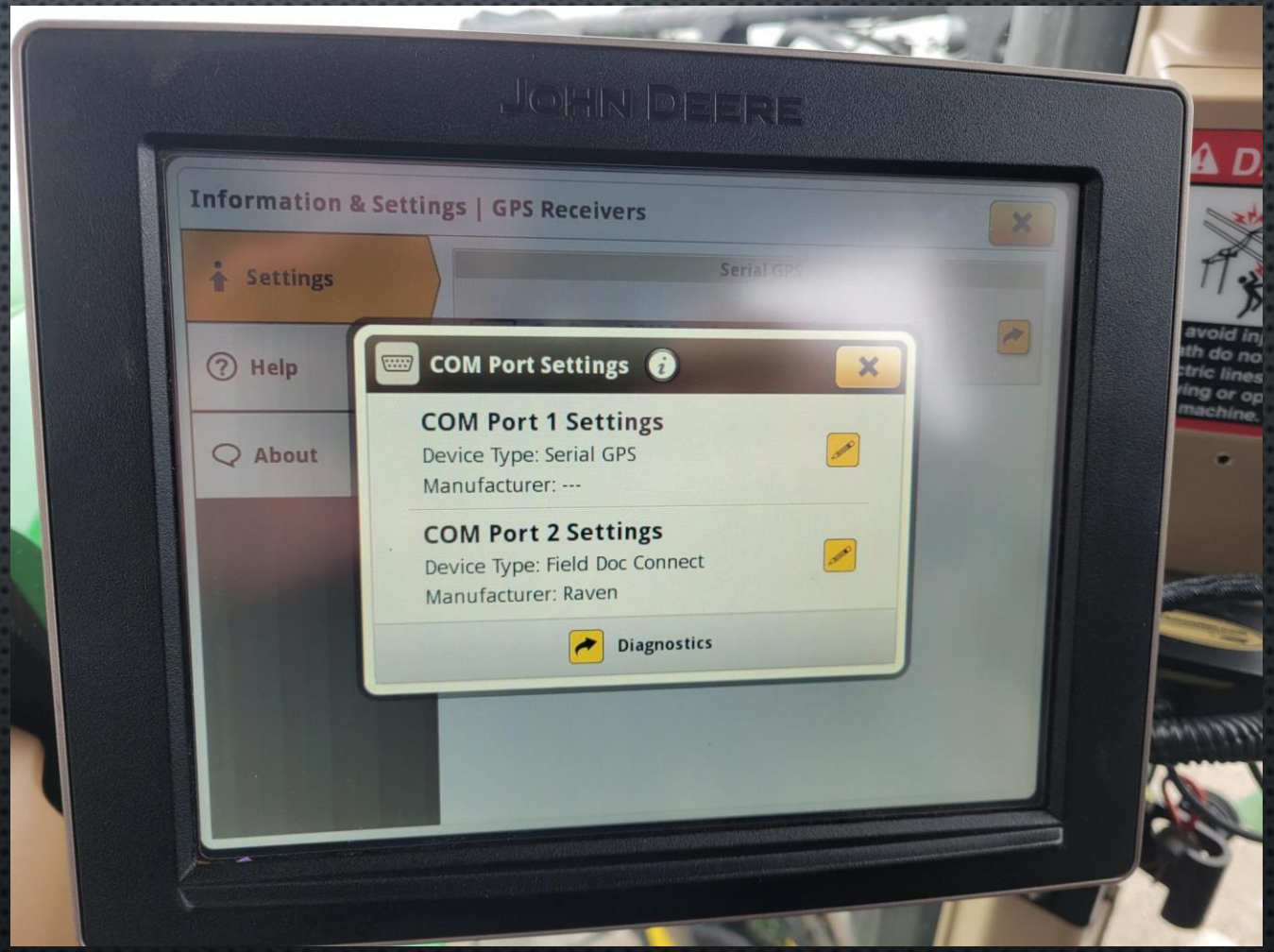
JOHN DEERE 30 SERIES SYSTEM SETUP/PROGRAMMING

- JOHN DEERE DISPLAY SERIAL GPS CONFIGURATION
  - NAVIGATE TO COM PORT SETTINGS ON THE DISPLAY THAT WILL BE RUNNING THE ENVELOP SYSTEM



JOHN DEERE 30 SERIES SYSTEM SETUP/PROGRAMMING

- JD 4640 DISPLAY SERIAL GPS CONFIGURATION
  - EDIT COM PORT 1 SETTINGS

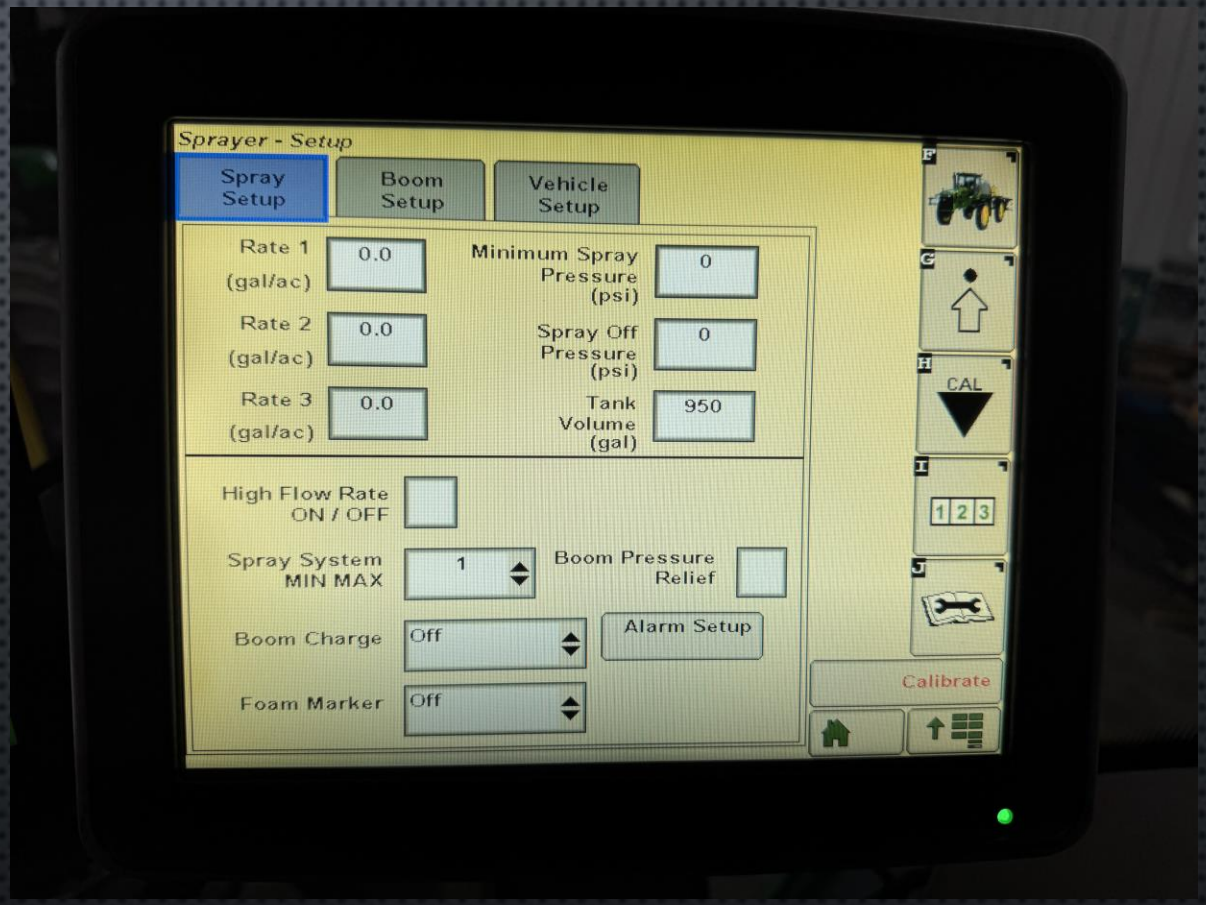


JOHN DEERE 30 SERIES SYSTEM SETUP/PROGRAMMING

- JD 4640 DISPLAY SERIAL GPS CONFIGURATION
  - CONFIGURE COM PORT 1 TO ACCEPT SERIAL GPS

JOHN DEERE 30 SERIES SYSTEM SETUP/PROGRAMMING

- MACHINE SIDE PROGRAMMING
  - NAVIGATE TO THE ORIGINAL SPRAYSTAR RATE CONTROL "SPRAY SETUP" PAGE
  - ZERO OUT ALL SETTINGS ON THIS SETUP PAGE TO DISABLE RATE CONTROL FUNCTIONS FROM THIS SYSTEM

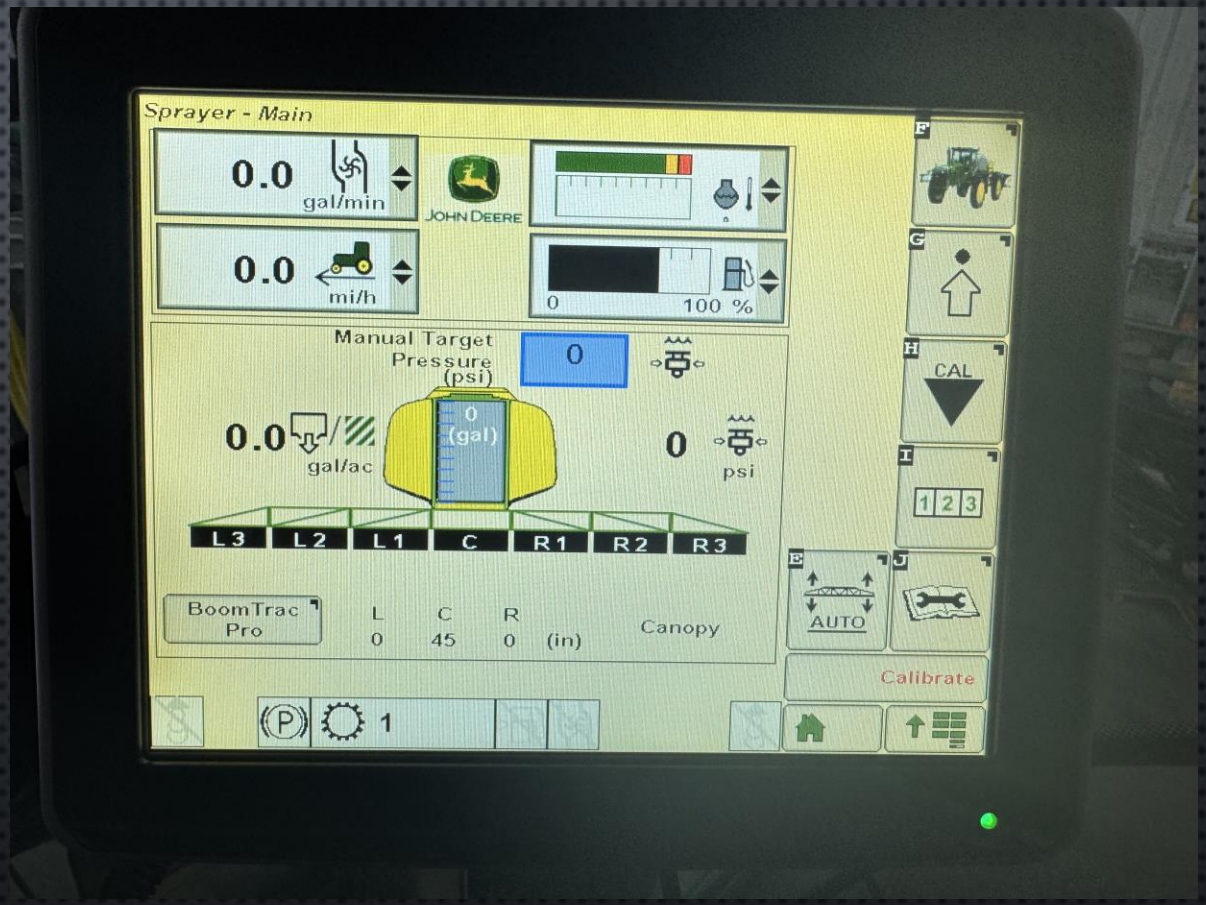


JOHN DEERE 30 SERIES SYSTEM SETUP/PROGRAMMING

- MACHINE SIDE PROGRAMMING
  - LOCATE THE SPRAY RATE KNOB ON THE DASH OF THE SPRAYER TO THE LEFT OF THE BOOM SECTION SWITCHES
  - TURN THIS DIAL TO THE MAN SETTING (SOME MACHINES WILL HAVE A ICON OF A PRESSURE GAUGE IN THIS LOCATION INSTEAD OF THE WORDING)
  - THE MACHINE WILL BE RUN IN THIS POSITION WHILE UTILIZING THE PINPOINT III ENVELOP SYSTEM
  - IF EXCESSIVE ERROR MESSAGES ARE NOTED ON THE ORIGINAL DISPLAY'S CONTROL SYSTEM, CHECK THIS KNOB FIRST!

JOHN DEERE 30 SERIES SYSTEM SETUP/PROGRAMMING

- MACHINE SIDE PROGRAMMING
  - NAVIGATE TO THE ORIGINAL SPRAYSTAR CONTROLLER RUN PAGE AND SET THE "MANUAL TARGET PRESSURE" TO ZERO
  - THIS BOX IS ONLY VISIBLE IF THE DIAL IN THE PREVIOUS SLIDE IS SET CORRECTLY



JOHN DEERE 30 SERIES SYSTEM SETUP/PROGRAMMING

- MACHINE SIDE PROGRAMMING
  - NAVIGATE TO THE MACHINE GUIDANCE PAGE AND DISABLE SECTION CONTROL
  - THE NEW PINPOINT III ENVELOP SYSTEM AND THE ADDITIONAL DISPLAY WILL NOW HANDLE THE SECTION CONTROL FUNCTIONS

JOHN DEERE 30 SERIES SYSTEM SETUP/PROGRAMMING

- Please refer to CapstanAG's John Deere 4640 setup document for further instruction not specifically related to these sprayer models
  - This document will assist in building machine and implement profiles, run page sets, shortcut bars, etc

https://capstanag.com/wp-content/uploads/2024/05/JD-4640-PP3-Setup.pdf