INSTALLATION MANUAL

Agra-GPS MACDON-JD Bridge for M1 and M2 Series Windrower

Version 1.1
Revision A
July 2025

AGRA-GPS LTD

Contact information	
Address	Agra-GPS Ltd. Box 2585 Stony Plain, AB T7Z 1X9, Canada
Phone	001 780 990 4052
Website	www.agra-gps.com

Release Notice
This is the July 2025 release (Revision A) of the MACDON Analog Bridge

Disclaimer
While every effort has been made to ensure the accuracy of this document, Agra-GPS Ltd assumes no responsibility for omissions and errors. Nor is any liability assumed for damages resulting from the use of information contained herein. Agra-GPS Ltd shall not be responsible or liable for incidental or consequential damages or a loss of anticipated benefits or profits, work stoppage or loss, or impairment of data arising out of the use, or inability to use, this system or any of its components.
DO NOT USE THE MACDON-JD Bridge IF YOU DISAGREE WITH THE DISCLAIMER.

Important Safety Information

Read this manual and the operation and safety instructions carefully before installing the MACDON-JD Bridge.

- Follow all safety information presented within this manual.
- If you require assistance with any portion of the installation or service of your equipment, contact Agra-GPS for support.
- Follow all safety labels affixed to the system components. Be sure to keep safety labels in good condition and replace any missing or damaged labels. To obtain replacements for missing or damaged safety labels, contact Agra-GPS.

When operating the machine after installing the MACDON-JD Bridge, observe the following safety measures:

- Be alert and away of surroundings.
- Do not operate the MACDON-JD Bridge system while under the influence of alcohol or an illegal substance.
- Remain in the operator's position in the machine at all times while the MACDON-JD Bridge system is engaged.
- Determine and remain a safe working distance from other individuals. The operator is responsible for disabling the MACDON-JD Bridge system when a safe working distance has been diminished.
- Ensure the MACDON-JD Bridge is disabled prior to starting any maintenance work on the machine or parts of the MACDON-JD Bridge system.
- Follow all safety instructions from the MACDON system as well as the JD system!
- The MACDON-JD Bridge must only be used in the field, never on the street!

Electrical Safety

- Always verify that the power leads are connected to the correct polarity as marked. Reversing the power leads could cause severe damage to the equipment.
- Verify that all cables and connectors are not going over sharp edges and are not pinned, as this could cause power shortages and/or malfunctions.

Introduction

Congratulations on your purchase of the MACDON-JD Bridge! The MACDON -JD Bridge is designed to bridge the communication between MACDON M1 and M2 Series Windrower and a John Deere display (1800, 2600, 2630, 4240, 4640 and 5Gen). This allows a JD display to create maps in the John Deere format and provides straight AB-Line autosteer.

New for 2025 is the support for CRG-Vision displays!! The install is identical regardless if the display is a John Deere display or the Agra-GPS CRG-Vision display and receiver.

The operator uses the JD display to create AB-lines. The current position is determined by a John Deere or CRG receiver and all this information is used by the MACDON-JD Bridge to create steering instructions for the windrower. All conditions for autosteer such as minimum speed, steering enabled etc. must be met by the MACDON system before the autosteer engage option in the windrower can be activated.

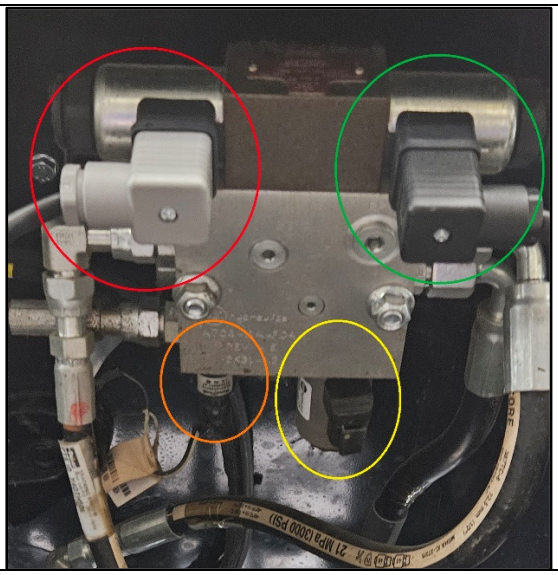
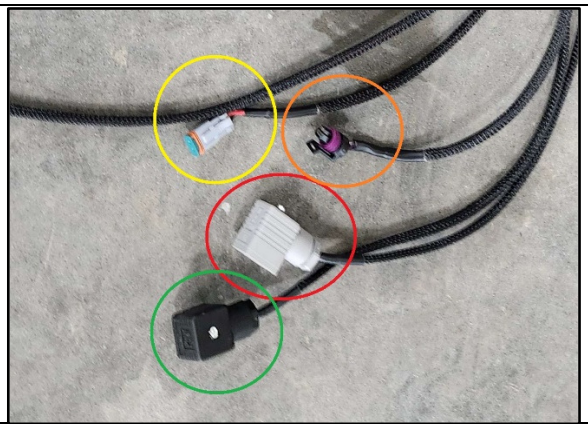
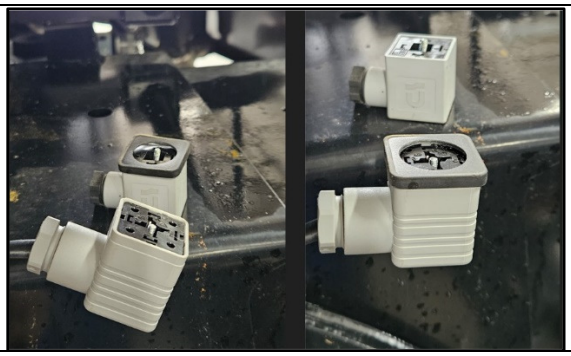
NOTICE
This manual is not intended to replace the manuals for the windrower or the John Deere system. The operator must read and understand the manuals and instructions of these systems, before using the Agra-GPS MACDON-JD Bridge.

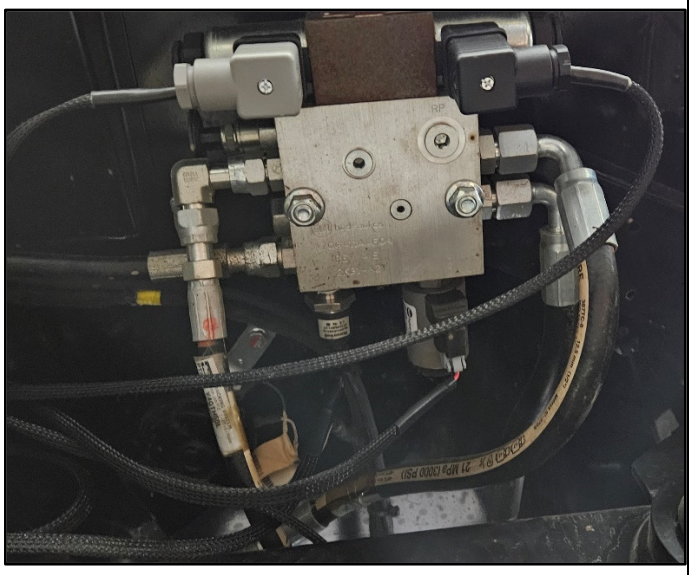
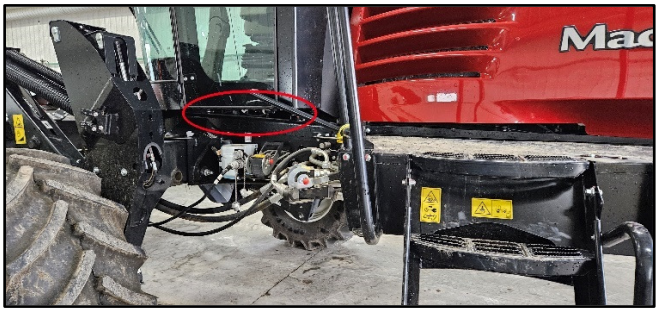
Part 1: Mounting MACDON-JD Bridge onto Machine

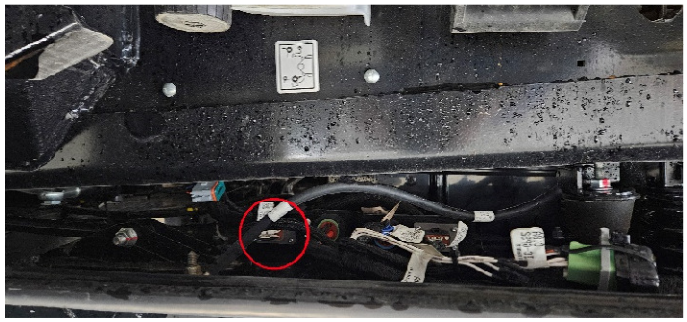
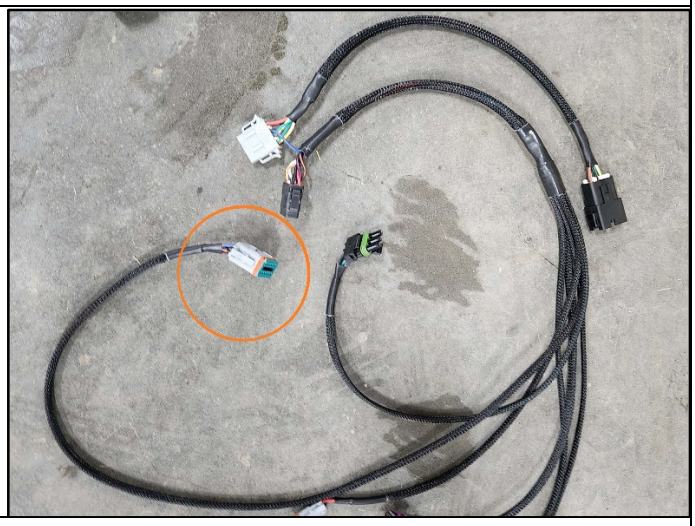
Step 1-1	Ensure MACDON-JD Bridge is installed firmly into the bridge case and that the case is installed onto the included bridge case mount as shown in *Figure 1-A*.	 *Figure 1-A – MACDON-JD Bridge installed on Bridge Case Mount*
Step 1-2	Locate installation location of MACDON-JD Bridge Mount under the front-right of cab as shown in *Figure 1-B*.	 *Figure 1-B – Bridge mount installation location*
Step 1-3	Install MACDON-JD Bridge Mount with plugs facing towards center of machine, as shown in *Figure 1-C*.	 *Figure 1-C – MACDON-JD Bridge with mount installed*

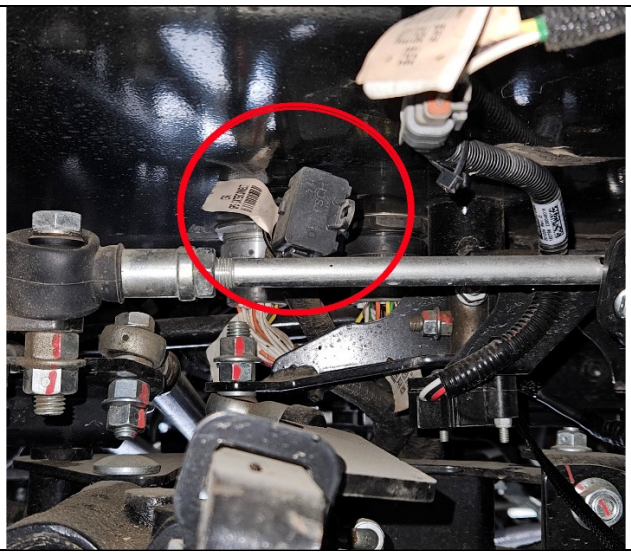
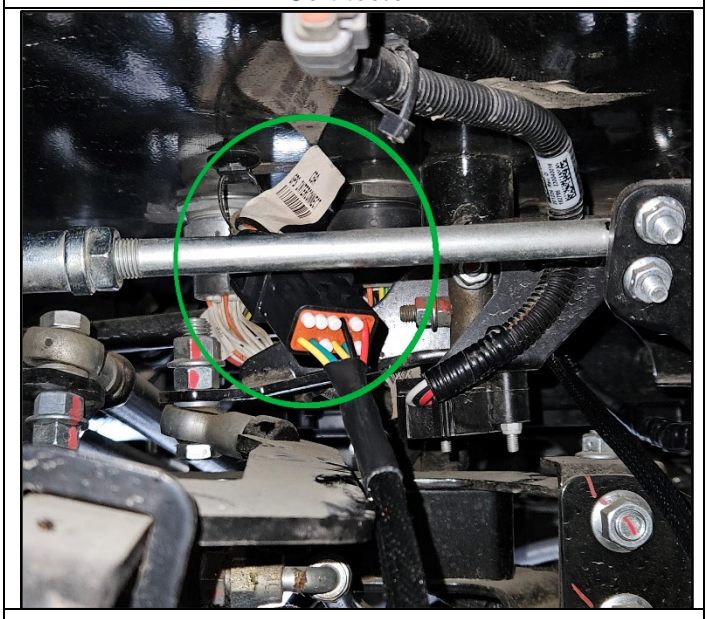
Part 2: Installing External Bridge Cable Harness

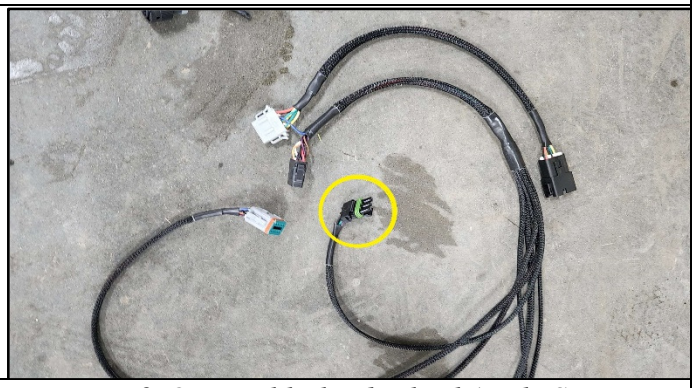
Step 2-1	Locate the external bridge cable harness as highlighted in *Figure 2-A*.	 *Figure 2-A – Highlighted External Bridge Cable Harness*
Step 2-2	Locate Hydraulic Steering Block located under the front-left of the cab as shown in *Figure 1-B*.	 *Figure 1-B – Bridge mount installation location*

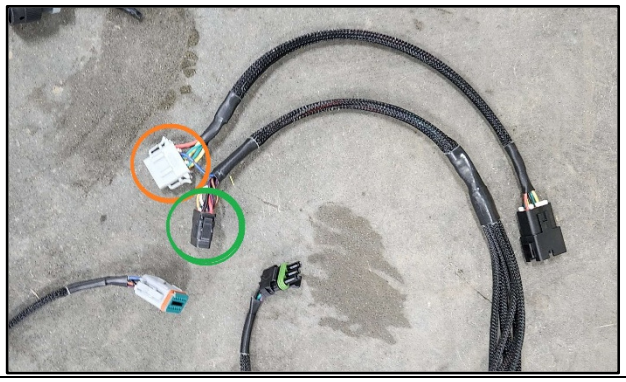
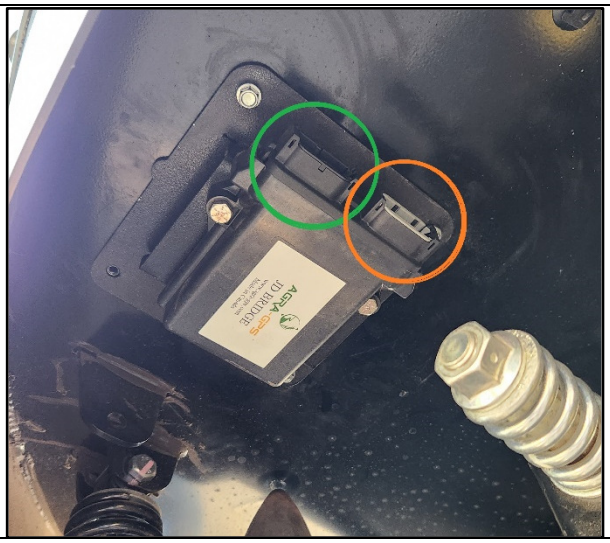
Step 2-3	Note the 4 individual installation plug locations on the hydraulic block as circled in *Figured 2-C*, and the corresponding connectors on the bridge harness as shown in *Figure 2-D*. Red – Right Valve Control Green – Left Valve Control Yellow – Main Valve Control Orange – Steering Wheel Kickout Sensor	 *Figure 2-C – Installation locations for bridge harness on hydraulic block*  *Figure 2-D – Connectors on external bridge harness corresponding to plugs on hydraulic block*
NOTE	**The screw threads on the Valve Control Plug may be fragile and prone to breaking with excessive force. Avoid pulling on connector or applying weight onto either connector.**	
Step 2-4	If existing connectors are installed on the Right and Left Valve control plugs, remove them via the screw on the bottom of the connector. The connector seals may also be transferred onto the bridge harness to prevent dirt and moisture contamination, as shown in *Figure 2-E*.	 *Figure 2-D – Connector seal may be transferred from existing connector to the bridge external harness valve control connector*

Step 2-5	Install the Right and Left Valve Control Plugs as shown in Step 3 above, with wires facing outward and tighten screw on bottom of connector to secure in place. Ensure that minimal weight is applied on the connector to prevent damage to the plug. Install the Steering Wheel Sensor Connector and the Valve Main Control Connector in the back of the hydraulic block as shown in Step 3 above. Ensure that both connectors 'click' into place and are firmly locked into the plugs. An image of the all four plugs fully connected is shown in *Figure 2-E*.	 *Figure 2-E – Hydraulic Block Connector installation*
Step 2-6	Retract the main stairs of the machine by using the lever as highlighted in *Figure 2-F*. Locate the Secondary machine plug assembly behind the stairs as shown in *Figure 2-G*.	 *Figure 2-F – Stairs in closed position – Highlighted Lever*  *Figure 2-G – Stairs in open position – Highlighted Plug Location*

Step 2-7	Locate Grey C14C plug mounted or near the Secondary machine plug assembly, as shown in *Figure 2-H*. Some machine configurations may come with Green C18A plug mounted to the assembly which should by swapped with the loose Grey C14C plug using the 4 screws on the mount.	 *Figure 2-H – Mount location of Grey C14C plug*
Step 2-8	Install the Grey Secondary Machine Connector as shown in *Figure 2-I,* into the Grey C14C plug as shown in *Figure 2-J*. Ensure connector is fully installed and clicked into place and the cabling is secured in place or away from moving components of the machine that could cause pinching or bending.	 *Figure 2-I – Highlighted Secondary Machine Connector*  *Figure 2-J – Installed Secondary Machine Connector*

Step 2-9	Locate Primary Machine Connector Plug C5A behind the bridge mount location near the front-right of the machine beneath the cab as shown in *Figure 2-K*.	 *Figure 2-K –Location Grey C14C plug*
Step 2-10	Install the Black Primary Machine Connector as shown in *Figure 2-L,* into the Black C5A plug as shown in *Figure 2-M*. Ensure connector is fully installed and clicked into place and the cabling is secured in place or away from moving components of the machine that could cause pinching or bending.	 *Figure 2-L – Highlighted Primary Machine Connector*  *Figure 2-M – Installed Primary Machine Connector*

Step 2-11	Locate the Wheel Angle Sensor located beneath the center of the cab near the front of the machine, as shown in *Figure 2-N*.	 *Figure 2-N – Location of Wheel Angle Sensor*
Step 2-12	Install the Wheel Angle Sensor Connector as shown in *Figure 2-O,* into the wheel angle sensor plug as shown in *Figure 2-P*. Ensure connector is fully installed and clicked into place and the cabling is secured in place or away from moving components of the machine that could cause pinching or bending.	 *Figure 2-O – Highlighted Wheel Angle Sensor Connector*  *Figure 2-P – Installed Wheel Angle Sensor Connector*

Step 2-13	ONLY applies to M2	*Connect the grey 12 pin DT connector to C6A. This connection provides information on header height, so is not critical for steering.*
Step 2-14	Locate the two MACDON-JD Bridge connectors as shown in *Figure 2-Q,* and the corresponding plugs on the mounted MACDON-JD Bridge as shown in *Figure 2-R*. Install the connectors into MACDON-JD Bride, ensuring that both sides of each connector click firmly into place.	 *Figure 2-Q – MACDON-JD Bridge Connectors*  *Figure 2-R – MACDON-JD Bridge Connector Locations*

Part 3: Installing Monitor Mount and Internal Cabling

<table>
<tr>
<td rowspan="3">Step 3-1</td>
<td rowspan="3">Locate the Interconnect connector and the Monitor Connection Cable as highlighted in yellow and orange in Figure 3-A, respectively.

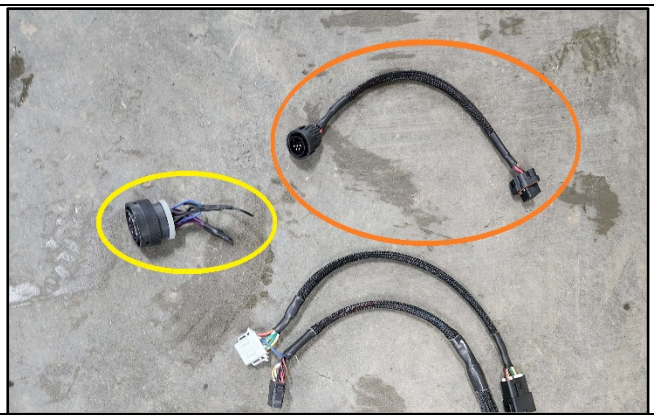
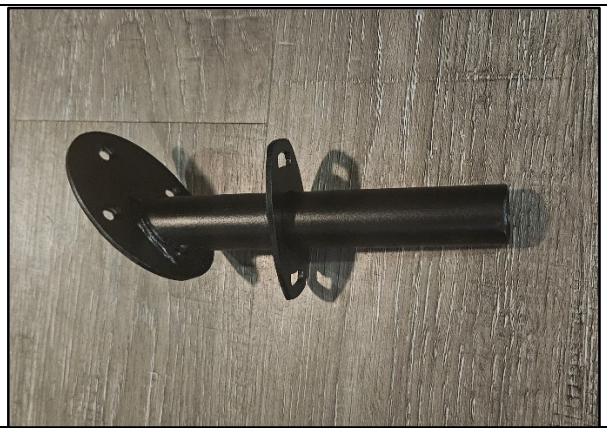
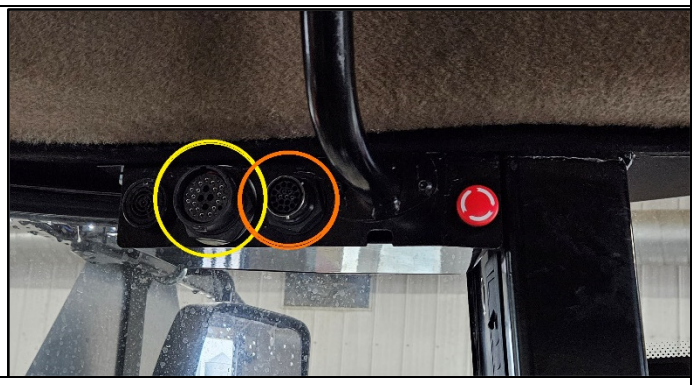
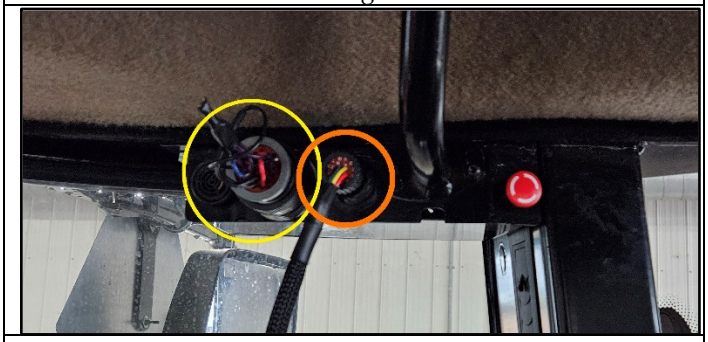
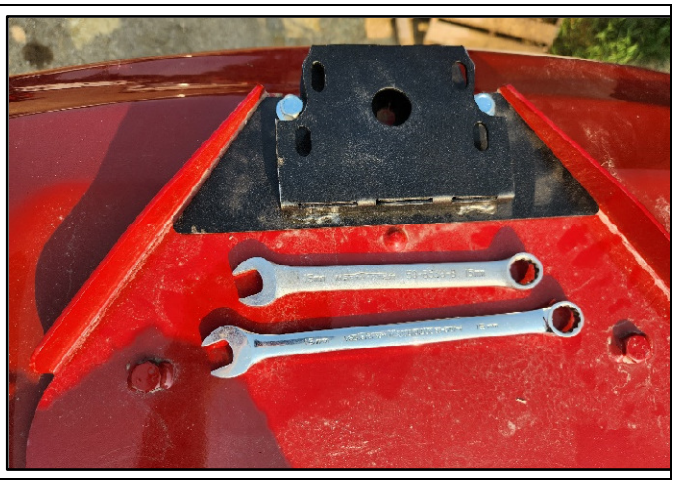
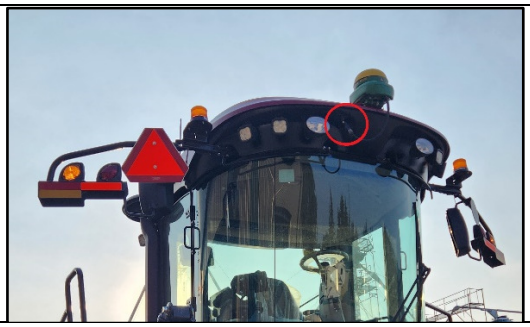
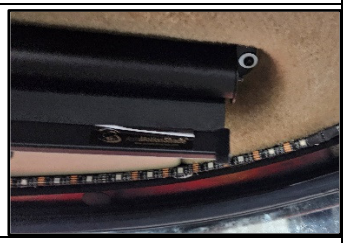
Also locate the internal monitor mount bracket as shown in Figure 3-B, if a pre-existing mount is not installed into the machine.</td>
<td>  </td>
</tr>
<tr>
<td>Figure 3-A – Interconnect Connector and Monitor Connection Cable</td>
</tr>
<tr>
<td> 
Figure 3-B – Internal Monitor Mount</td>
</tr>
<tr>
<td>Step 3-2</td>
<td>If an existing monitor mount is not installed into the machine, install the replacement in the designated slot beside the “Road Mode” switch as shown in Figure 3-C.</td>
<td>  </td>
</tr>
</table>

		Figure 3-C – Internal Monitor Mount
Step 3-3	Install the Interconnect Connector and the Monitor Connection Cable into the plugs next to the monitor mount as shown in *Figure 3-D* and *Figure 3-E*. Ensure both connectors are firmly locked into place.	 *Figure 3-D – Interconnect and Monitor Connector Plugs*  *Figure 3-E – Interconnect and Monitor Cable Installed*

Part 4: Installing GPS Receiver Mount and Cabling

Step 4-1	Locate and install the Base GPS Receiver Mounting Bracket onto the front roof of the machine, as shown in *Figure 4-A* and *Figure 4-B*.	 *Figure 4-A – Installation of Base GPS Receiver Bracket*  *Figure 4-B – Installation of Base GPS Receiver Bracket*

Step 4-2	Locate and install the Primary GPS Receiver Mounting Bracket onto the Base Mount as shown in *Figure 4-C* and *Figure 4-D*. Once the mounts are securely in place, the GPS receiver can be attached to the bracket.	 *Figure 4-C – GPS Receiver Bracket Installed*  *Figure 4-D – GPS Receiver Bracket Installed*

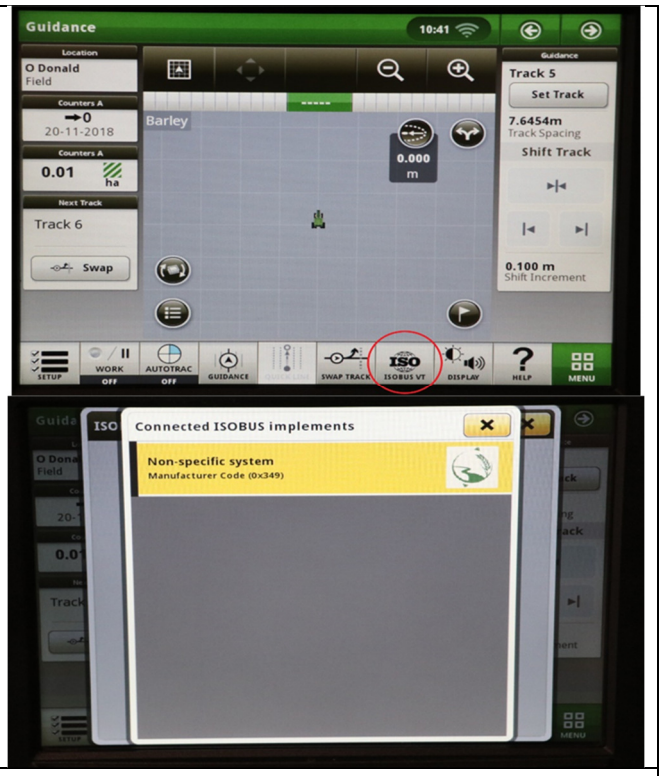
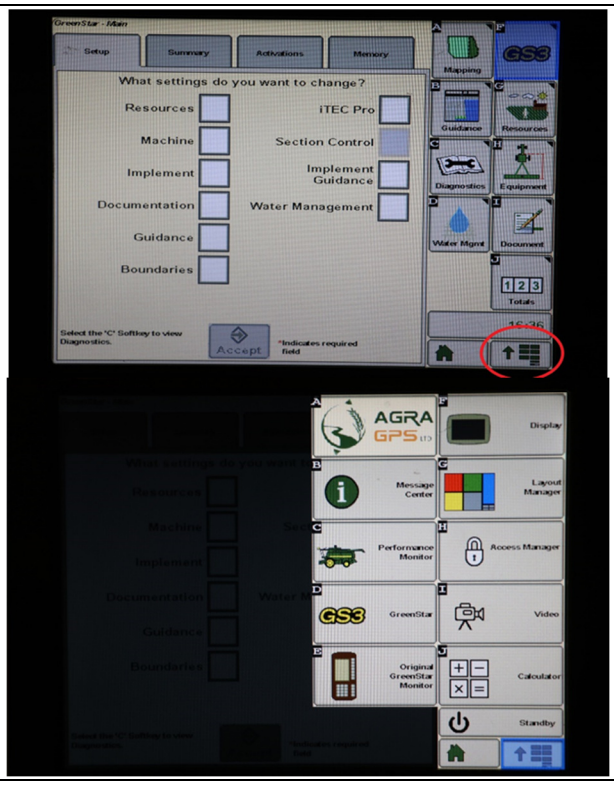
Step 4-3	Depending on the configuration of the machine, the GPS receiver connector may already be available below the GPS receiver mount as highlighted in *Figure 4-E*. If a connector is already available outside the cab, skip to Step 4-6 If your machine was delivered "Trimble ready" it may have the 12 pin DTM Trimble connection on the outside. You can use the adapter delivered with the kit to connect a JD Starfire OR use step 4-4 to get the JD connection from inside the roof.	 *Figure 4-E – Location of GPS Receiver Connector*
Step 4-4	If no GPS receiver connector is present outside of the cab of the machine, one must be pushed through the rubber grommet from within the cab. To access the connectors, first remove the front shade by removing the two bolts on either side, as shown in *Figure 4-F*. After removal of the front shade, the front ceiling panel can be removed to access the front ceiling compartment, as shown in *Figure 4-G*.	  *Figure 4-F – Bolt Location to remove front shade*  *Figure 4-G – Front Ceiling Compartment*

Step 4-5	Machines may come installed with one or two different GPS receiver connectors and should be easily available within the ceiling compartment. Connector C666A is shown in *Figure 4-H* and works natively with all compatible GPS receiver units. An alternative smaller 12-pin connector may also be available and is usable via the included adapter cable with the MACDON-JD kit. Either connector may be used with the MACDON-JD system. Find one of the connectors and pass it through the rubber grommet within the ceiling compartment.	 *Figure 4-H – C666A Connector contained within ceiling compartment*
Step 4-6	Connect the GPS Receiver to the available connector coming from the rubber grommet. If the connector available is not the native GPS receiver connector, use the provided adapter cable.	

Part 5: ISO Application

The AgraGPS bridge comes with an ISO application that will be loaded onto the John Deere monitor. The app should automatically store itself on the monitor after the first few minutes of the initial startup. On subsequent runs the app will load itself from memory as soon as possible.

Where to find the AgraGPS ISO Application on the John Deere Monitor		
Monitor Model	**Description**	**Images**

4640	On a John Deere 4640 monitor the application will be loaded in the ISOBus VT section on the main page of the display, as shown in *Figure 5-A.*	 *Figure 5-A – ISOBus VT Location*
1800 2600 2630	On John Deere 1800, 2600, 2630 the application will be shown in the side menu of the John Deere display. The side menu is opened by clicking the button on the bottom right of the display, as shown in *Figure 5-B*. **NOTE:** John Deere 1800 and 2600 monitors do not show a loading bar for ISO applications, while 2630 and 4640 monitors do.	 *Figure 5-A – ISO App Menu Location*

If the ISO application is not loaded:

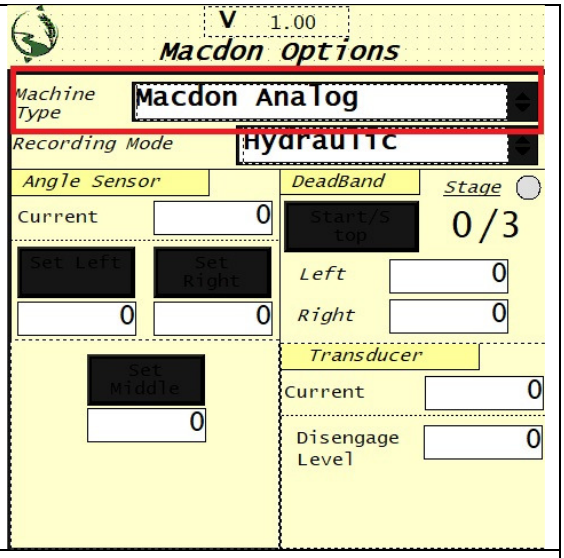
1) Try clearing the monitor's memory. On 2630 monitors this can be done in the Message Center in the side menu. Go to the Cleanup tab, check controllers, then Begin Cleanup. On 4640 monitors this can be done in the info page of the ISOBus VT. Navigate to the ISOBus VT window and click the info button at the top of the page, then press Clean Up ISO Bus VT.

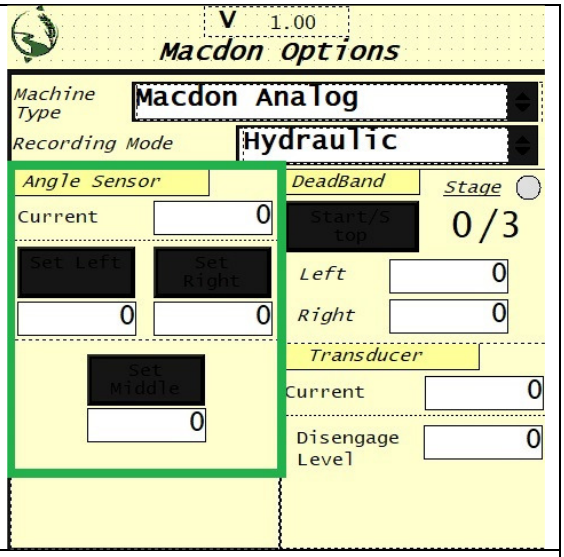
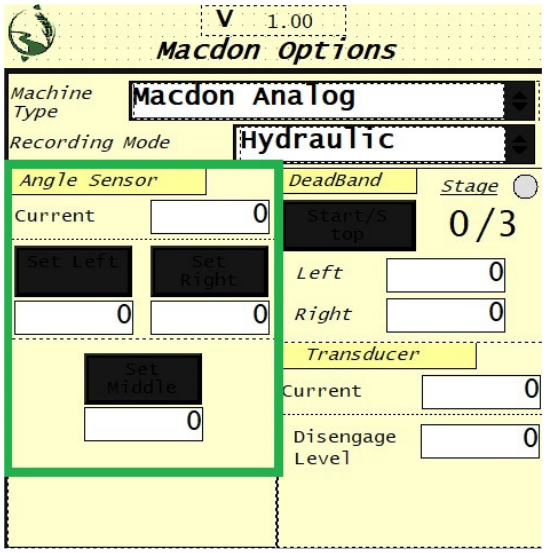
2) Do a hard reset of the John Deere monitor (Unplug it, then plug it back in).

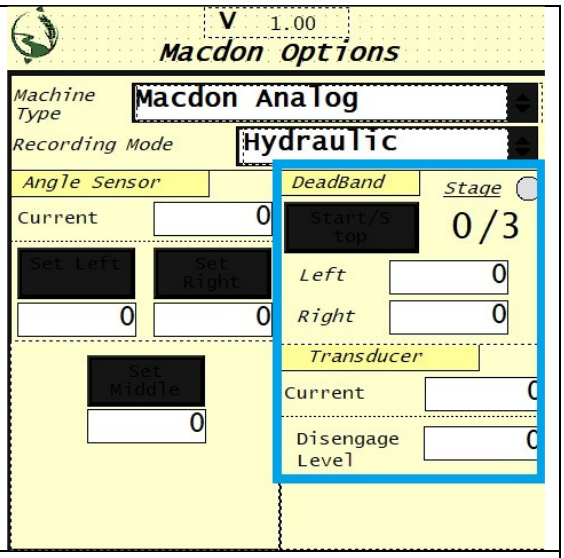
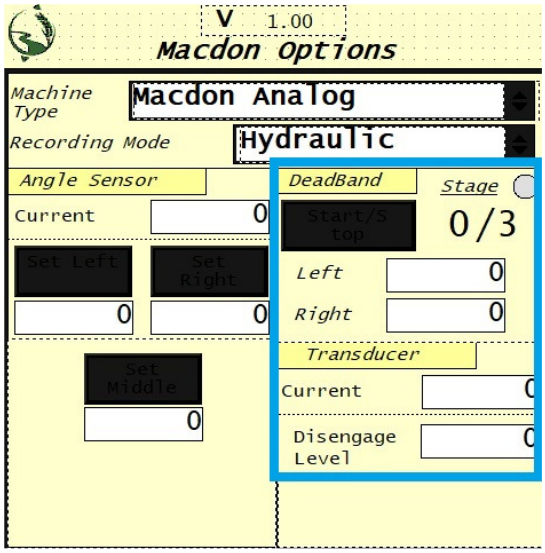
3) Do a full restart of the machine. Remember the app may take a few minutes to load.

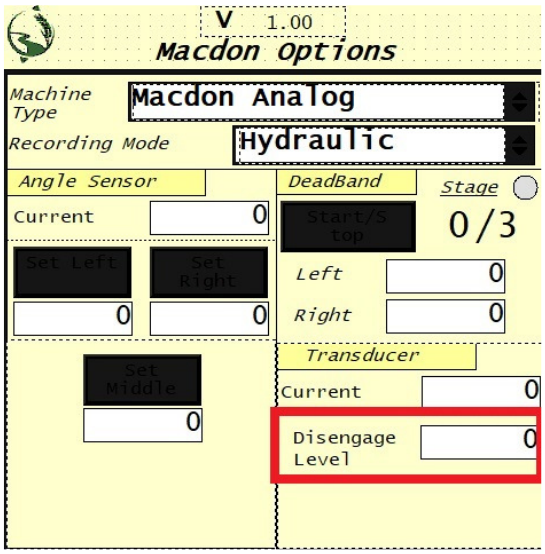
Part 6: Calibration of Machine via Agra-GPS ISO APP

Once installation of the Agra-GPS ISO App is completed, it must be used to calibrate the sensors of the machine before steering to optimize performance.

Step 6-1	Take note of the main calibration page from within the app, and ensure that setting "Machine Type" is set to "Macdon Analog", as shown in *Figure 6-A*.	 *Figure 6-A – Main Calibration Page*

Step 6-2	The left side of the calibration page contains information about the wheel angle sensor, including the current value in addition to the values corresponding to maximum left and maximum right as shown in *Figure 6-B*. These values will be calibrated in the next step.	 *Figure 6-B – Wheel Angle Sensor Section*
Step 6-3	**Warning:** Make sure area around machine is clear as machine will be moving and turning during calibration steps With the machine running and after ensuring area around machine is clear, move the machine forward slowly followed by turning the steering wheel all the way to the left, then press “Set Left” to save the value. Repeat the same procedure with turning the steering wheel all the way to the right, then press “Set Right” to save the value. Bring the machine to rest, return the steering wheel to the center position and verify that the current wheel angle value is approximately half-way between the left and right max values set. If not, repeat this calibration step.	 *Figure 6-C – Wheel Angle Sensor Calibrated*

Step 6-4	The right side of the calibration page contains information about the DeadBand settings of the machine which controls the minimum power required to steer the machine left and right, in addition to the transducer which detects when the steering wheel is moved by the operator to disengage steering, as highlighted in *Figure 6-D*.	 *Figure 6-D – DeadBand and Transducer Section*
Step 6-5	**Warning:** Make sure area around machine is clear as wheels may turning during calibration steps. The DeadBand calibration is an automatic process, done with the machine running but stationary. Ensure the area around the machine is clear in case of movement, then press the “Start/Stop” button to begin calibration. Calibration occurs in 3 stages, and the current stage will be displayed within the DeadBand section and accompanied by a yellow flashing symbol while the calibration is active. The Calibration process usually takes about 60 seconds but may take up to	

	10 minutes to complete depending on the machine. A successful calibration will result in the yellow flashing symbol turning green, as shown in *Figure 6-E*. If the symbol turns red, it means that calibration has failed and must be repeated. **Note:** Repeated Failures of the DeadBand Calibration may indicate that the Transducer disengage level is too low, causing the machine to believe the steering wheel is being moved by the operator. Increase this value in 1000 increments until the DeadBand Calibration succeeds.	*Figure 6-E – Successful Deadband Calibration*
Step 6-6	Calibration of the Transducer Disengage level must be done while auto-steer is engaged as it determines the amount of force applied to the steering wheel to disengage steering. A lower value means that the system is more sensitive to steering movements but may unintentionally disengage during normal steering operations. A higher value will lower sensitivity but may require a lot of force from the operator to disengage the auto-steer. To change the value during operation, select the Disengage value option within the ISO App and set a new value, as shown in *Figure 6-F*. For the MACDON M1170 Series equipped with the stock sensor, a reasonable range of values for the Disengage level is between 15,000 and 25,000. It is recommended to start the value near 15,000 and increase it as necessary if auto-steer disengage happens during automatic steering.	 *Figure 6-F – Changing Transducer Disengage Level*