

INSTALLATION MANUAL

Agra-GPS Kubota-JD Bridge



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Release Notice

This is the November 2024 release (v1.1) of the Kubota-JD Bridge Installation Manual.

Disclaimer

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DO NOT USE THE Kubota-JD Bridge IF YOU DISAGREE WITH THE DISCLAIMER.

Important Safety Information

Read this manual and the operation and safety instructions carefully before installing the Kubota-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 your 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 Kubota-JD Bridge, observe the following safety measures:

- Be alert and aware of surroundings.
- Do not operate the Kubota-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 when the Kubota-JD Bridge system is engaged.
- Determine and remain a safe working distance from other individuals. The operator is responsible for disabling the Kubota-JD Bridge system when a safe working distance has been diminished.
- Ensure the Kubota-JD Bridge is disabled prior to starting any maintenance work on the machine or parts of the Kubota-JD Bridge system.
- Follow all safety instructions from Kubota as well as the John Deere.
- The Kubota-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 Kubota-JD Bridge. The Kubota-JD Bridge is designed to bridge the communication between a Kubota tractor (autosteer ready) and a John Deere display (1800, 2600, 2630, 4240, 4640, and G5). This allows a JD display to create maps in the John Deere format and also provides JD autosteer.

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

NOTICE

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

Preliminary

Park the machine where the ground is level, dry and clean. Leave the machine OFF during the installation. Follow safety practices and read the instructions carefully as you proceed through the install process. Recommended: remove the negative battery terminal connection before starting installation.

The tractor will require autosteer enable buttons to be ordered from Kubota if it is not already equipped, as shown.



Step 1: Mounting the Kubota-JD Bridge

First, start by removing the lower panel located by bottom right side of the seat. Once inside the panel, slide the Kubota-JD bridge into its holder and mount it against the built-in mounting bracket with the 'cable side' of the bridge facing down.



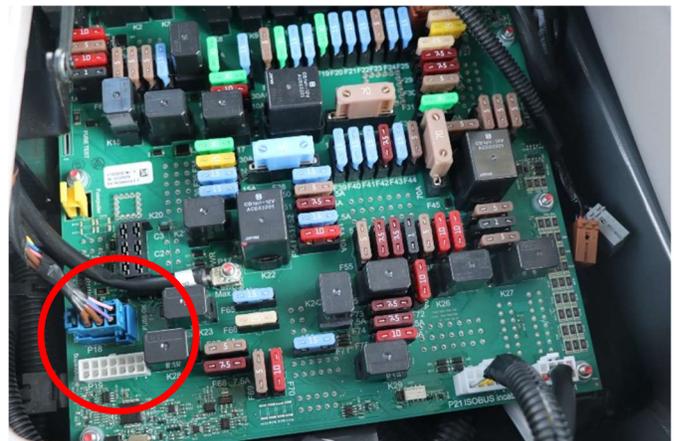
Step 2: Install Harness Connections

Once the bridge is mounted, attach the grey 12-pin Deutsch male end of the Kubota adapter cable to the bridge's grey 12-pin Deutsch female. Feed the other end up to the circuit board (located underneath the panel to the back right of the cab) so that you can make the following connections.



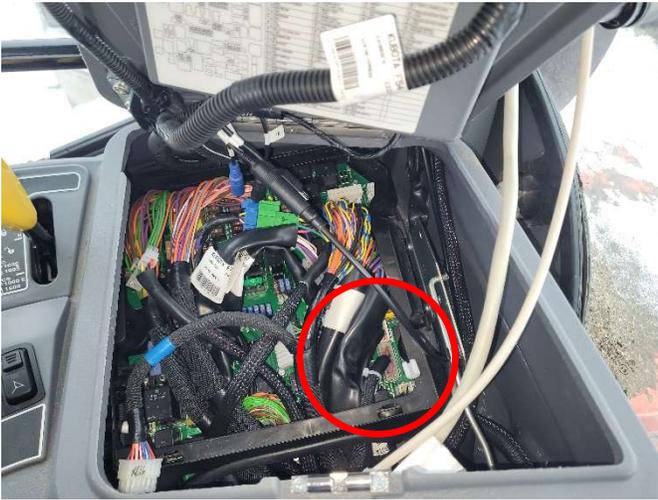
The 14-pin Molex female 39-01-2140 connects to the 14-pin Molex male (X103 in the Kubota schematics).

On some tractors, the connector is labelled "autosteer". **WARNING!** There may be another 14-pin Molex connector. Ensure you select the correct one.

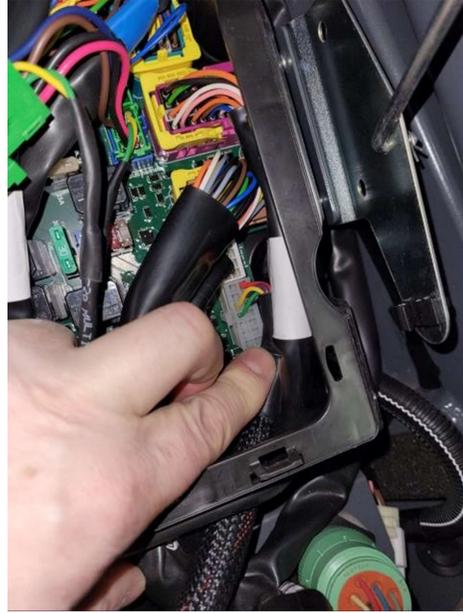


Circuit board on older M7-171

Another example of the 14-pin Molex connection location is shown here:

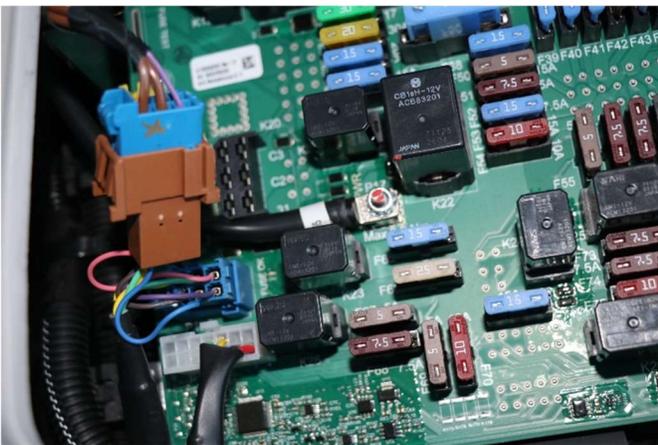


Circuit board on 2024 M7-174

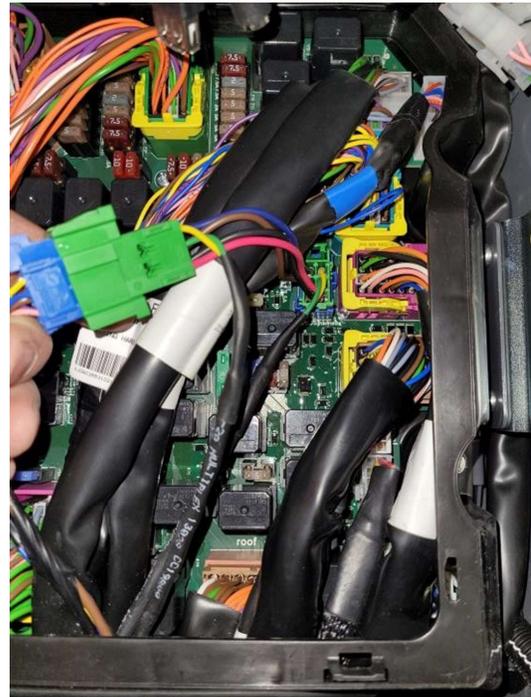


M7-172

Unplug the ISOBUS connector harness on the circuit board. The 6-pin JPT plug (**blue or green**, TE 1-965640) connects to the 6-pin JPT blue receptacle on the circuit board. The 6-pin JPT receptacle (**brown or green**) connects to the blue 6-pin JPT plug that was just unplugged.



M7-171



M7-172

Next, connect the 12-pin mini-Deutsch male connector into the Bridge. The other ends of this cable will go to the John Deere receiver and the John Deere Monitor.



Finally, connect the blue wire from the Agra-GPS harness to the momentary autosteer resume switch. Connect the other side of the switch to ground (machine frame).



Step 3: Mounting the JD Display

The mounts for the JD display are NOT part of the Kubota-JD Bridge, however they can either be ordered as an optional item from AgraGPS or directly from RAM.

The JD-display may be mounted many different ways.
You may use the standard JD mounts or a RAM mount. RAM-270U + 2 * 1.5" balls (RAM-202U) + 4" double socket arm (RAM-201U)
<http://www.rammount.com/part/RAM-270U>

(John Deere 4640 mounted on the right door)



Please refer to Appendix A for additional notes and instructions for Kubota technicians

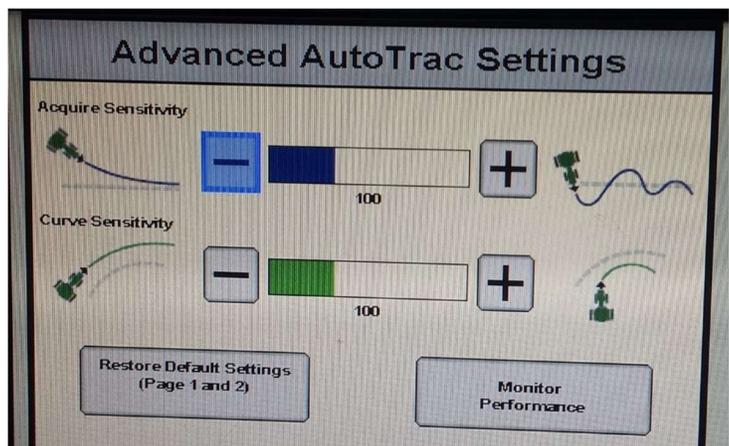
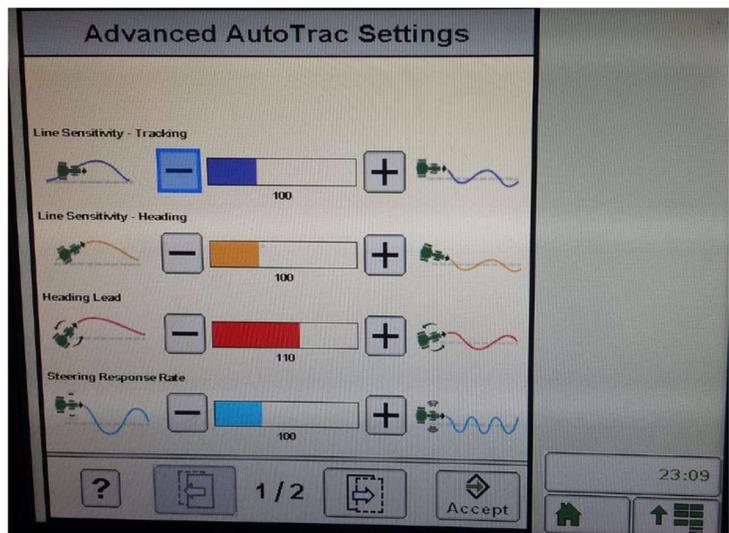
Step 4: Mounting the JD Receiver

The Kubota-JD Bridge does NOT include a standard JD-receiver bracket. You will want to create a mount which is centered left-to-right on the cab roof.



Step 5: Adjusting steering

Using the JD display, you may adjust your steering performance. Most machines will perform optimally with all JD settings at 100. If a change is required, find an open area where you can travel at target speed and adjust one parameter at a time until you are satisfied with the steering performance.



Step 6: Additional information for Kubota-JD Bridge

- The Kubota-JD bridge will automatically disengage above 13.5 mph (21.7 kmh). This is due to limitations of the autosteer system set by the machine.
- The Kubota autosteer enable switch must be in the off position (red light off) when the machine is started, otherwise the machine will give an error and will not be able to autosteer. To fix this error, simply toggle the switch off and then back on.
- There will be a flashing amber autosteer indication in the steering console. This is normal, and can be ignored.

Step 7: ISO Application

The Kubota 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. The Kubota app includes:

- Calibration
- Option to change work recording mode
- Option to change the machine type
- Optional autosteer engage button & status
- Help page
- Support page
- Diagnostic page

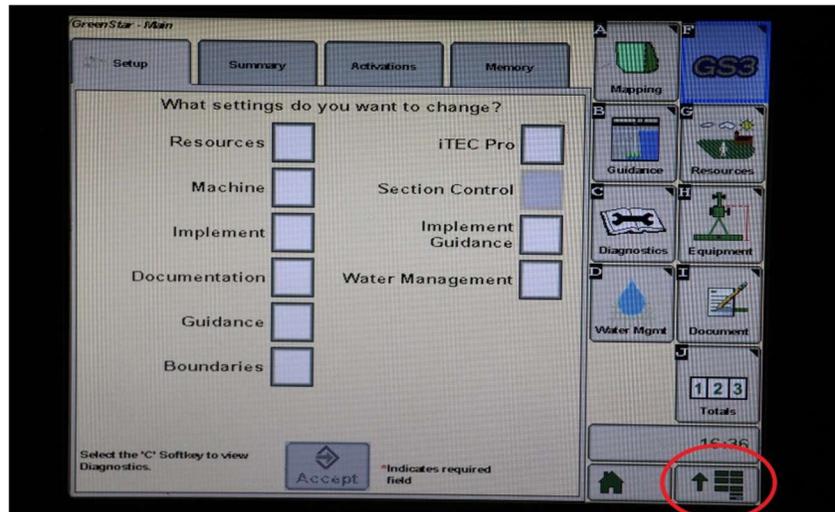
Where to find the Kubota ISO application on the John Deere monitor:

- On a John Deere 4640 the application will be loaded in the ISOBus VT section on the main page of the display.

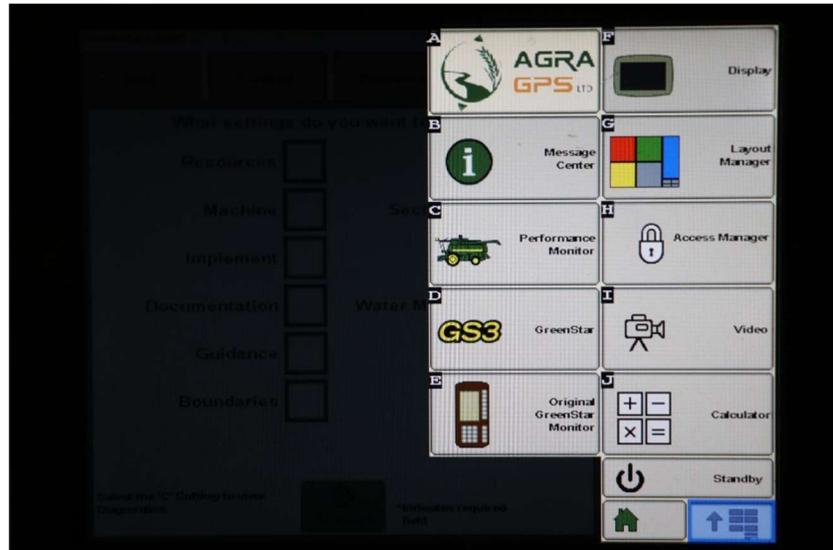




- On John Deere 1800, 2600, 2630 the application will be shown in the side menu of the John Deere display. The side menu is opened by clicking the button on the bottom right of the display.



- **NOTE:** John Deere 1800 and 2600 monitors do not show a loading bar for ISO applications, while 2630 and 4640 monitors do.



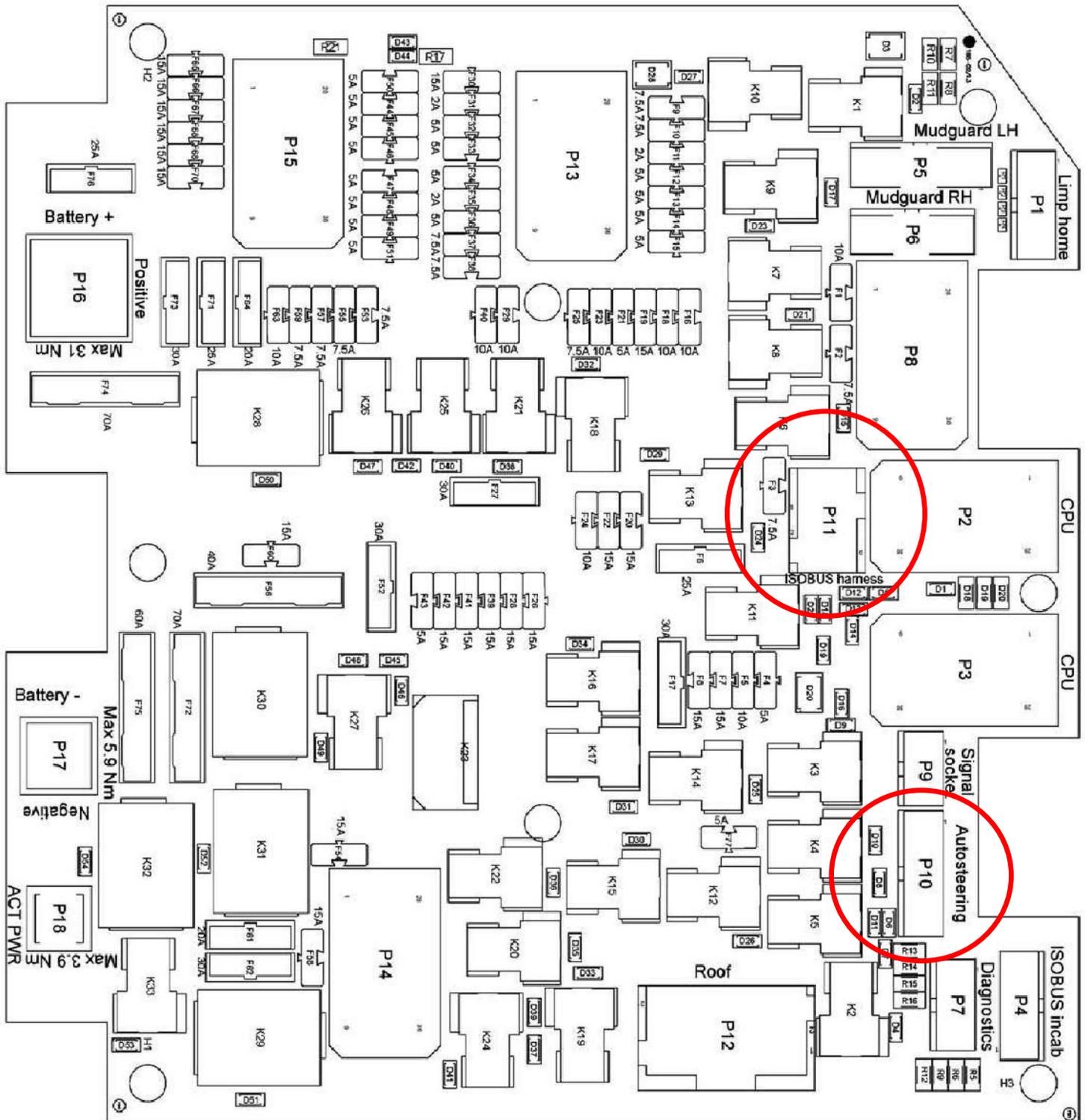
If the ISO application is not loaded:

- 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.
- Do a hard reset of the John Deere monitor (Unplug it, then plug it back in).
- Do a full restart of the machine. Remember the app may take a few minutes to load.

APPENDIX A – NOTES PROVIDED BY KUBOTA TECHNICIANS

- P10 is your 14 pin Molex machine CANbus connection (bottom right). It should be empty.
- P11 is your ISOBus harness. It will have a blue plug, which you unplug and attach the Y harness with the green plugs.

2TB5X01125A01enUS



- You do not need the geo control license number as there is no NAC, so if the tractor is autosteer equipped you can proceed with the install.

Once the JD monitor is installed, reconnect the negative battery terminal and start the tractor to ensure that everything powers up including the JD monitor. Once this is verified you can proceed to the next steps. (The following steps were performed with M7-172.)

1. Check the parameters for VCU1 and VCU2. In VCU1 you will need to have existence of auto-steering enabled. In VCU2 you will need to have Steering angle sensor availability enabled, Autosteering Availability turned off, and the NAC turned on in your parameters. Please ensure you check these prior to doing any work on the system. If the Autosteering Availability is turned on it will generate 3 different errors when you enable autosteering. These are:
 - a. VCU2 SPN 523105 fmi 19
 - b. SPN 523106 fmi 19
 - c. SPN 523104 fmi 19 (it is looking for the NAC which is not on the tractor)
2. Once verified, power down and connect your Y cable with the hood up. On the driver's side there is a 4-pin plug for the steering controller connect there as shown. **If loader is equipped remove it from the machine.**
3. Once you start the tractor and everything is powered up you will need to perform the wheel angle sensor and the spool calibration in the steering controller (SC) using the Y cable supplied with KOBD AG or ACE. For simplification, the following steps are done with KOBD ACE:
 4. Attach a flow meter to remote 1 and start using that valve. Restrict the flow until you see 1500 psi on the gauge this will speed the oil temp warm up for the transmission.
 5. Monitor the transmission oil temp in the data monitor under the TCU section and wait until it reaches 55-60 °C prior to doing any calibration.
 6. Connect ACE to the Y cable with the tractor running, park brake engaged, autosteering switch turned on and tractor at idle with no load on the hydraulics
 7. Perform the wheel angle sensor calibration (WAS calibration in the SC) if it fails it will generate an error when you restart the tractor. Wait for it to prompt you by highlighting the desired step in blue to perform it. If it fails, you will see a WAS error come up on the dash and monitor SCM error SPN 520205 FMI 23 is the error. Shut the machine down and restart it. Perform it again with warmer or cooler oil depending on the temperature and ensure you follow the prompts.
 8. Perform the spool calibration it is critical to have the oil warm for this part as it takes time (approx. 10 mins) and if you do not have the transmission oil temp close to 60 degrees prior to start it will cool off and fail during the calibration. When prompted by the blue highlighted part in ACE, perform the necessary steps as outlined. After the initial click, it takes a few minutes to



prompt you to move the steering wheel (only small movement needed left and right). Once completed, it will start moving the wheels (not steering wheel) left and right slightly and slowly. Do not touch the steering wheel during this and allow it to complete. If it fails, you will see 1 of 3 errors A, B or C:

- Error code A: Invalid wheel angle observed
- Error code B: Can't calculate value within spool set point limit
- Error code C: Timeout occurred at move to max point.

If it fails you will also see SCM error SPN 520501-22 pop up. This indicates that the spool is in the incorrect position and is not where it needs to be. Please redo the calibration.

9. **Ensure you turn off the existence of the NAC once these steps are completed, otherwise it will generate errors.** Cycle the key off for a period of 10 seconds after successful calibration. Now power everything up and start the engine with the autosteer-enable switch turned off. Once running, switch it on. At this point it should be talking to the Bridge and the JD GPS system. You can check this on the Agra-GPS ISO app Diagnostic page. If the Resume indicator is yellow, pressing the momentary switch should make it green. Also, the Machine Status indicator should show green.



Troubleshooting

- If the JD monitor does not power up recheck connections at the fuse panel and ensure that they are all tight and secured. If they are check the fuses for the autosteering system.
- If you see error SPN 520201-FMI 22, then cycle the key off, wait about 10 seconds and recycle the key to see if it clears. If you see error SPN 299023-FMI 12, it means you powered it up with the autosteering switch on and it timed out from not seeing flow. Cycle the key to the off position for 10 seconds and restart the tractor.
- If you see SPN 520208- FMI 31, it is an external safety that disables autosteering. This usually means that the wheel angle sensor and the speed sensor do not mesh, so redo your wheel angle sensor calibration.