Kubota WorkSmart
AUTOSTEER

FREQUENTLY ASKED QUESTIONS

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Abbreviations Index

CAN bus	Controller area network bus
DGPS	Differential global positioning system
ECU	Electronic control unit
EGNOS	European geostationary navigation overlay service
GNSS	Global navigation satellite system
GPS	Global positioning system
LED	Light-emitting diode
MDU	Mechanical drive unit
NTRIP	Networked transport of RTCM via internet protocol
OTA	Over the air
PPP	Precise point positioning
RTCM	Radio Technical Commission for Maritime Services
RTK	Real-time kinematic
SBAS	Satellite-based augmentation system
WAAS	Wide area augmentation system

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About WorkSmart Autosteer

HOW DO I GET SUPPORT?

Support begins with your local Kubota dealer. Go to: https://www.kubotausa.com to find your nearest dealer.

WHAT KIND OF ANTENNA DOES WORKSMART AUTOSTEER USE?

The WorkSmart Autosteer system uses the NovAtel SMART 2 GPS Receiver which is custom configured and optimized for the WorkSmart Autosteer system.

WHAT ARE THE CAPABILITIES OF THE WORKSMART AUTOSTEER ANTENNA?

The WorkSmart Autosteer antenna supports DGPS and PPP solutions. In the United States and Canada WorkSmart Autosteer uses the Wide Area Augmentation System and can be upgraded to use the NovAtel TerraStar service for high precision operations. Please contact your dealer for subscription pricing and more details.

CAN I OUTPUT DGPS INFORMATION FROM THE WORKSMART AUTOSTEER ANTENNA TO 3RD PARTY EQUIPMENT?

The SMART 2 antenna supports 3rd party Serial communications through a 9-pin serial connector with the addition of the Serial communications adapter harness.

ARE ALL COMPONENTS WATERPROOF?

All components are IP67 rated. Essentially, an IP67 rating signifies that a device is well-protected against dust and can handle being briefly submerged in water. The WorkSmart Autosteer system should NEVER be power washed.

HOW DO I KEEP WORKSMART AUTOSTEER SOFTWARE AND FIRMWARE UP TO DATE?

Software updates are “pushed” to the ECU via the app using an Over-The-Air (OTA) software updating process. Periodically, it is good to connect the smart device to the internet and open the app to check for updates. Updates will then be downloaded to the device and held until the device is connected to the WorkSmart Autosteer ECU where the operator will be asked to initiate the software update.

WHAT DOES ECU AND MDU STAND FOR?

ECU stands for Electronic Control Unit. This is the “brain” of the system. MDU stands for Mechanical Drive Unit. This component actuates the steering of the machine to achieve optimal performance.

WHAT IS THE DIFFERENCE BETWEEN THE STEER-READY SYSTEM AND THE STANDARD SYSTEM?

The main difference between steer-ready and standard systems lies in the tractor’s factory configuration. The latest M7 model features integrated hydraulic steering valves, eliminating the need for an external steering unit (MDU). Its steering system connects directly to the ECU for seamless control. In contrast, the standard setup relies on an external motor—known as an MDU—to steer the machine.

WHAT ARE THE ENVIRONMENTAL SPECIFICATIONS FOR THE WORKSMART AUTOSTEER ECU?

The ECU can operate between -40ºC ~ +75ºC with 9-36 Volts (Direct Current) and is reverse polarity protected.

WHAT ARE THE ENVIRONMENTAL SPECIFICATIONS FOR THE WORKSMART AUTOSTEER MDU?

The MDU can operate between -20ºC ~ +75ºC at 9-36 Volts (Direct Current) and is reverse polarity protected.

HOW DOES THE WORKSMART AUTOSTEER ELECTRONIC CONTROL UNIT (ECU) COMMUNICATE TO THE APP?

The ECU communicates with the app via Bluetooth connection. It is important to ONLY establish the bluetooth connection between the app and ECU through the WorkSmart Autosteer app.

WHAT COMMUNICATION CAPABILITIES DOES THE WORKSMART AUTOSTEER ECU HAVE?

The ECU has the following interface links: CAN bus (x2), Ethernet, RS232, Bluetooth 5.2, and dedicated remote engage/disengage input.

HOW DOES THE WORKSMART AUTOSTEER MDU COMMUNICATE WITH THE ECU?

The MDU communicates with the ECU via CAN bus.

WHAT IS THE LEVEL OF ACCURACY FOR THE SYSTEM?

DGPS (WAAS) is accurate to +/- 6”-8” (15-20cm). TerraStar (PPP) is accurate to +/- 2” (5cm). TerraStar-C PRO (PPP) is accurate to +/- 1” (2.5cm). All measurements are considered “pass to pass” within 15 minutes at R95 (95% of the time).

IS A TABLET OR SMARTPHONE NECESSARY FOR USE?

Yes. An iOS or an Android mobile device is required to operate the system. The Android or iOS device must be model year 2020 or newer.

IS INTERNET SERVICE REQUIRED?

Internet service is not required for general operation, but is necessary for some functions such as downloading firmware updates or syncing data to the cloud.

WHAT IS THE WARRANTY FOR THE WORKSMART AUTOSTEER SYSTEM?

24 months on the electronic components, 6 months for the installation kit components.

I DAMAGED AN INDIVIDUAL PART. HOW DO I GET A NEW ONE?

Contact your local Kubota dealer.

DOES THE SYSTEM WORK IN REVERSE?

The Shuttle Shift function allows the WorkSmart Autosteer system to steer the vehicle in reverse.

WILL THE WORKSMART AUTOSTEER DETECT OBSTACLES?

The WorkSmart Autosteer system will NOT detect obstacles. It is imperative that the operator remain in control of the machine at all times.

HOW DO I KNOW IF MY TRACTOR IS COMPATIBLE WITH THE WORKSMART AUTOSTEER SYSTEM?

Check with the WorkSmart Autosteer system model matrix at: https://www.kubotausa.com/worksmart

CAN I USE THE SYSTEM IN LOW-LIGHT OR RAINY CONDITIONS?

The system can be used during any time of day or weather conditions.

WHAT IS THE RETURN POLICY?

Consult the Kubota dealer where you purchased the system.

About WorkSmart Autosteer App

WHAT IS THE WORKSMART AUTOSTEER APP AND HOW DOES IT WORK WITH THE WORKSMART AUTOSTEER SYSTEM?

The WorkSmart Autosteer app is the user interface between the WorkSmart Autosteer system and provides the display terminal functionality to the user.

WHAT SMART DEVICES IS THE WORKSMART AUTOSTEER APP COMPATIBLE WITH?

The WorkSmart Autosteer app is compatible with iOS or Android devices. (Devices must be 2020 or newer).

WHERE CAN I DOWNLOAD THE WORKSMART AUTOSTEER APP?

The WorkSmart app can be found on the Apple App Store or Play Store for Android devices.

DOES THE WORKSMART AUTOSTEER APP REQUIRE AN INTERNET CONNECTION TO OPERATE?

Internet service is not required for general operation, but is necessary for some functions such as downloading firmware updates, syncing data to the cloud, or operating with NTRIP RTK.

DOES THE WORKSMART AUTOSTEER APP NEED TO BE CONNECTED TO THE ECU AT ALL TIMES DURING OPERATION?

The WorkSmart Autosteer App needs to be connected to the ECU at all times.

DOES MY DATA LIVE IN THE APP, OR CAN IT BE BACKED UP TO CLOUD BASED STORAGE?

Your data is in the app, and once you create an account, you may sync your data to the cloud.

HOW DOES THE WORKSMART AUTOSTEER APP CATEGORIZE MY DATA?

The WorkSmart Autosteer system App categorizes my data by Machine, Attachment, and Task.

CAN I ACCESS MY ACCOUNT ON MULTIPLE SMART DEVICES?

By performing cloud data synchronization, you can back up the data to the web portal, which can then be accessed by multiple mobile devices under the same login credentials.

HOW DO I SET UP A WORKSMART AUTOSTEER ACCOUNT?

After downloading the application, tap on “Create Account” and follow the instructions. For additional information, please refer to the Operator's Manual.

HOW DO I DELETE MY ACCOUNT?

Please refer to the Operator's Manual.

WHAT IS THE URL FOR THE WORKSMART AUTOSTEER WEBAPP?

The URL for the WorkSmart Autosteer web page is: https://www.kubotausa.com/worksmart

WHAT IS THE DIFFERENCE BETWEEN THE MOBILE APP AND THE WEB APP?

The WorkSmart Autosteer system Mobile app is the interface between the user and the Autosteer system. Think of the WorkSmart Autosteer system Web app as the back office where machine, attachment, and task data can be viewed once it has been uploaded from the mobile app.

Installation

WHERE CAN I FIND THE INSTALLATION MANUAL?

You can find the Installation Manual at: https://www.kubotausa.com/worksmart

WHAT COMPONENTS ARE INCLUDED IN THE WORKSMART AUTOSTEER SYSTEM?

The bundles vary by model, but generally speaking, the system contains an electronic control unit (ECU), a GNSS receiver, a mechanical drive unit (MDU), and the appropriate installation kits. Consult the Installation Guide corresponding to your machine for more information.

HOW LONG DOES IT TAKE TO INSTALL THE WORKSMART AUTOSTEER SYSTEM?

Installation and setup will take approximately four hours and can be performed by yourself or an Authorized Kubota dealer.

WHAT IS THE ETHERNET CABLE USED FOR?

The ethernet cable is used for service technician access to the electronic system.

WHAT DO I DO IF I FEEL BINDING OR RUBBING WHEN I TURN THE STEERING WHEEL?

If you feel binding or hear scraping when turning the steering wheel, check for clearance above and below the Autosteer MDU. Shim adjustment may be needed. Consult the installation manual for more information.

WHAT TOOLS ARE NEEDED FOR THE INSTALLATION?

The following tools are needed for installation of the WorkSmart Autosteer system:

- Screwdriver, Phillips #1
- Screwdriver, Phillips #2
- Screwdriver, Phillips #2, 90 degree*
- Permanent marker or paint pen*
- 5/8” drill bit (step drill bit acceptable)*
- Allen key, 3 mm
- Allen key, 4 mm
- Allen key, 1/4”
- Wrench or socket, 10 mm
- Wrench or socket, 12 mm
- Dremel tool or file set*
- Torque wrench*
- Sharp knife*
- Ladder or equivalent for installing the antenna*

Please refer to the Installation Manual for more information.
*For some installations

Troubleshooting

THE DIRECTION SHOWN IN THE APP IS THE OPPOSITE OF THE WAY I'M ACTUALLY MOVING. WHAT MIGHT BE CAUSING THIS?

If the vehicle icon appears to be reversing while driving forward, tap "Status" in the main menu, then tap the "Override" button in "Direction" to correct the machine orientation.

WIDE/NARROW ISSUES

- Check for a dislocated antenna
- Did you adjust your attachment width or Nudge setting on this or your previous pass
- Make sure that your attachment is mounted correctly, trailing correctly, and in optimal operating condition
- Repeat the "Roll Bias" step in the calibration process

WEAVING

- Check for a dislocated antenna
- Make sure that your attachment is mounted correctly, trailing correctly, and in optimal operating condition
- Repeat the "Roll Bias" step in the calibration process

WHAT IF MY TRACTOR VEERS OFF COURSE?

This is an unlikely event where the operator might mistakenly engage the WorkSmart Autosteer system perpendicular to a pass. Disable the WorkSmart Autosteer MDU or steering valve before traveling down any roads.

WHAT DO I DO IF THE ECU WILL NOT CONNECT TO THE APP?

In the "On Field Readiness" screen of the WorkSmart Autosteer app, access the ECU section. If your ECU serial number appears, tap to connect. If not, tap on "Scan ECUs" and select the ECU serial number that appears. If no ECU serial number appears, ensure that the Bluetooth is switched on in your device and then return to the WorkSmart Autosteer app in order to connect to the ECU.

THE LED LIGHT ON THE ANTENNA, MDU, OR THE ECU DOES NOT ILLUMINATE. WHAT COULD CAUSE THIS?

If the LED light on the Antenna, MDU, or the ECU does not illuminate, make sure that the power button is in the on position. Check for a blown fuse and inspect the wiring harness for damage. Consult your local Kubota dealer for further information.

AUTOSTEER WILL NOT ENGAGE

Verify that calibration has been successfully completed. Check your speed - too slow or too fast could prevent engagement.
NOTE: If working on a Gen 1 or Gen 2 Steer-Ready M7 Premium Tractor, the PVED-CLS valve will need to be calibrated. Please consult your local dealer for more information.

GNSS

WHAT KIND OF ANTENNA DOES WORKSMART AUTOSTEER USE?

The WorkSmart Autosteer system uses the NovAtel SMART 2 GPS Receiver which is custom configured and optimized for the WorkSmart Autosteer system.

WHAT ARE THE CAPABILITIES OF THE WORKSMART AUTOSTEER ANTENNA?

DGPS and PPP with TerraStar L and TerraStar C Pro signals.

CAN I OUTPUT DGPS INFORMATION FROM THE WORKSMART AUTOSTEER ANTENNA TO 3RD PARTY EQUIPMENT?

Yes. The SMART 2 antenna supports 3rd party Serial communications through a 9-pin serial connector with the addition of the Serial communications adapter harness P/N: 77700-14000.

WHAT IS GNSS?

GNSS stands for Global Navigation Satellite System. It is a satellite system that provides autonomous geo-spatial positioning with global coverage. GNSS allows a receiver to determine its position, velocity, and time by processing signals from satellites.

WHAT IS SBAS?

SBAS is a system that improves the accuracy, integrity, and availability of GNSS signals by using additional satellite-broadcast messages. SBAS includes systems like WAAS, EGNOS, and others.

Setup and Calibration

WHAT DOES THE CALIBRATION PROCESS FOR THE WORKSMART AUTOSTEER SYSTEM DO?

The calibration process creates machine steering parameters based on a series of driving scenarios.

WHY DO I NEED TO ENTER MY MACHINE DATA AND MEASUREMENTS?

Entering your machine data and measurements - a "profile" as we call it - ensures that the system understands and can predict machine operation while driving. Dimensions like Antenna Height and Wheelbase, along with the calibration steps help the system to learn how tightly a machine can turn, or how much compensation may be needed when the machine is traversing rough or uneven terrain.

HOW DO I ENTER MY MACHINE DATA AND MEASUREMENTS?

Machine dimensions can be entered by first tapping on the “Machine” button in the lower section of the app home screen, and then tapping on the “**+**” in the top right hand corner. Fields having an “*****” require data that must be entered (but other fields may not apply, or data is optional). Please pay close attention to the "ECU Orientation" section as an improperly oriented ECU can cause undesirable steering performance.

CAN I USE A MACHINE PROFILE TEMPLATE TO GET STARTED?

Machine Profile Templates are offered as a convenience in the machine profile setup and calibration process. These templates will get you started, but for maximum steering precision, or if you experience any steering anomalies, be sure to complete the calibration process manually.

HOW CAN I FINE TUNE MY STEERING SYSTEM PERFORMANCE?

Steering settings can be adjusted in order to fine tune the steering performance. Operators can adjust settings like Sensitivity, Attack, and Backlash manually to suit their individual needs.

WHAT IS THE SENSITIVITY SETTING?

The Sensitivity setting controls how aggressively the steering system works to stay on the desired path. A high sensitivity level may appear to be desirable, but in some operations, or at certain speeds, this may cause the system to overcompensate and appear jittery. Conversely, a lower sensitivity level can cause the steering system performance to appear lazy or meandering in the field.

The Calibration process will initially set the Sensitivity level value, but if fine tuning is desired, first note the original value and then make small adjustments until the desired performance is achieved. If you go too far, back off the setting or return to the original value. If all else fails, repeat the calibration process to reestablish a default.

WHAT IS THE ATTACK SETTING?

The Attack setting controls how aggressively the steering system works to acquire the desired path. The Attack setting works for the first 100 feet of line acquisition to bring the machine and attachment on line in the quickest, most efficient route possible. The Calibration process will initially set the level of Attack, but if fine tuning is desired, first note the original value and then make small adjustments until the desired performance is reached. If you go too far, just back off the setting or return to the original value. If all else fails, repeat the calibration process to re-establish a default.

WHAT IS THE BACKLASH SETTING?

The Backlash setting compensates for any variance or wear in the steering system components of the machine. Obviously, we want the machine to perform at optimal levels, but think of an older machine that may have a worn steering gear or suspension. The operator will turn the steering wheel just a little before the steering components initially react. This “play” is what is referred to as Backlash, and while this example may be a bit extreme, all mechanical components experience some acceptable levels of free play where components interact.

In normal operation, minor free play can largely go unnoticed, but when we are attempting to steer the machine with a high level of accuracy, this free play can greatly affect the steering accuracy and the Backlash setting compensates for this.

The Calibration process will initially set the level of Backlash, but if fine tuning is desired, first note the original value and then make small adjustments until the desired performance is reached. If you go too far, just back off the setting or return it to the original value. If all else fails, repeat the calibration process to reestablish a default.

As an example, in normal operation 2 cm of free play can go unnoticed, but when attempting to steer the machine with a signal accuracy of 2 cm, this free play can effectively double the steering error.

WHAT ARE THE FOUR STEPS IN THE CALIBRATION PROCESS?

Step 1: Turning Radius

This step calculates the set turning radius of the machine. The user will be prompted to turn left in a complete circle and then right in a complete circle to establish how tightly the machine can steer.

Step 2: Lock-to-Lock

In this step, the system will steer the tractor from full lock right to full lock left in order to calculate the voltage required for the motor to turn the steering wheel.

Step 3: Zig-Zag

In this step, the system will steer the tractor in a zig-zag pattern in order to calculate the feedback of the accelerometer and it also calibrates that data to the position of the steering wheel through the steering process.

Step 4: Roll Bias

In this step, the operator follows the prompts to create a straight line. At the end of the straight line, the user is asked to turn around and engage the steering. The system will calculate the “lean” of the machine as the user drives, and average that against the “lean” of the machine on the way back. This calculation will allow for any artificial lean in the machine caused by tire size or inflation differences etc.

Operation

WHERE CAN I FIND AN OPERATOR'S MANUAL?

You can find the Operator's Manual at: https://www.kubotausa.com/worksmart

WHAT IS QUICK STEER?

Quick Steer offers a way for an operator to utilize auto steering functionality without creating a task.

Note: A task will need to be created for each operation if the desire is for the data to be stored for future reference.

HOW DO I CREATE A MACHINE PROFILE?

To create a new machine profile, open the app, select the "Machine" button at the bottom of the screen, and tap the "+" at the top right of the Machine screen.

HOW DO I CREATE A PROFILE FOR MY ATTACHMENT?

To create a new attachment profile, select the "Attachment" button at the bottom of the screen and tap the "+" at the top right of the Attachment screen.

HOW DO I CREATE A NEW TASK?

To create a new task profile, select the "Task" button at the bottom of the screen and tap the "+" at the top right of the task screen.

HOW DO I SELECT A MACHINE FOR MY TASK?

To select a machine, in the "On Field Readiness" section of the home screen in the app, tap "Machine" and choose the desired machine profile from the list. If your desired machine profile does not exist, then go back and select the "Machine" button at the bottom of the Home screen.

HOW DO I SELECT AN ATTACHMENT TO BE USED WITH MY MACHINE?

To select an attachment, in the "On Field Readiness" section of the home screen in the app, tap "Attachment" and choose the desired machine profile from the list. If your desired attachment profile does not exist, then go back and tap on the "Attachment" button at the bottom of the Home screen.

HOW DO I CHOOSE A TASK FOR MY MACHINE AND SET IT UP TO CARRY IT OUT?

To select a task, in the "On Field Readiness" section of the home screen in the app, tap "Task" and choose the desired machine profile from the list. If your desired attachment profile does not exist, then go back and tap on the "Attachment" button at the bottom of the Home screen.

HOW DO I CREATE A BOUNDARY?

To set a boundary, tap the main menu icon (the “hamburger stack”) from the operation screen, then select “Boundary”.

Next, choose “Create New Boundary” and follow the on-screen prompts. You’ll be asked to specify which side of the machine the boundary should be placed.

Boundaries can define areas to include or exclude from your task. To include a task area—such as creating a border around it—and you’re moving clockwise along the inside of the outer edge, set the boundary to the left side of the machine.

To exclude part of the task area—such as avoiding a specific section—and you’re moving clockwise along the outside of that section, set the boundary to the right side of the machine.

ONCE I AM FINISHED CREATING MY BOUNDARY, HOW DO I END THE RECORDING?

When you have finished creating your boundary, re-enter the boundary section of the main menu and choose “End Boundary”.

HOW DO I SWITCH BETWEEN WAYLINES OR WAYLINE TYPES?

To switch between waylines, tap the main menu icon (the “hamburger stack”) from the operation screen and select “Previous Waylines” from the “Waylines” menu.

I AM NOT FINISHED WITH MY TASK. HOW CAN I LEAVE THE APP AND RETURN TO FINISH IT LATER?

If you need to leave your task but have not yet completed your operation, from the main menu in the operation screen, tap “Pause Task”. This will keep the task open and active. When you return, you will be given the option to resume paused tasks. This will let you pick up operation where you left off.

I AM FINISHED WITH MY TASK, HOW DO I GO ABOUT COMPLETING IT?

When you are finished with your operation and are ready to close your task, tap “Complete Task” from the main menu of the operation screen. This will close your task and allow you to sync the task data to your cloud account. If you have created a boundary in your task, and have completed your task, reselecting that completed task will create a template for your next operation in that location.

HOW DO I BACK UP MY DATA?

From the home screen in the app, scroll down and tap “Sync Now”. You will need to be logged into your WorkSmart Autosteer account.

HOW CAN I SELECT A WAYLINE?

To select a wayline, tap the main menu from the operation screen and select “Waylines”. This will allow you to select the type of wayline you wish to create or to choose a previously created wayline.

WHAT IS STRAIGHT MODE?

Straight mode is straight line guidance between two set points (A-B) — Ideal for consistent passes across long, uniform field sections.

WHAT IS CONTOUR MODE?

Contour mode is uniform contour guidance — best where contour passes are consistent across the field based on curved boundaries or terraces.

WHAT IS THE A+ HEADING MODE?

A+ Heading mode is straight line guidance based on a single point and compass heading — ideal as a replacement for “dead reckoning” a path across the field.

WHAT IS FREEFORM CONTOUR MODE?

Freeform Contour mode follows custom, freeform paths — excellent for navigating irregular or non-linear field boundaries with precision.

WHAT IS PIVOT MODE?

Pivot mode guides the machine in concentric circles — optimized for fields that are served by a center pivot irrigation system.

WHAT IS SHUTTLE-SHIFT?

Shuttle-Shift steers the machine in forward or reverse helping the operator acquire the desired path and maintain guidance heading in either direction of travel.

WHAT IS THE ETURN/AUTOMATED HEADLAND TURN FUNCTION?

Automated headland turn function assists the operator by automating the task of turning the machine onto the next pass helping to improve efficiency and lessen operator fatigue.

WHAT IS THE NUDGE FUNCTION?

The Nudge function allows the operator to move their desired guidance path left or right by a distance that is user defined.

WHAT IS THE SNAP FUNCTION?

The Snap function allows the operator to move their desired guidance path to the current location of the machine.